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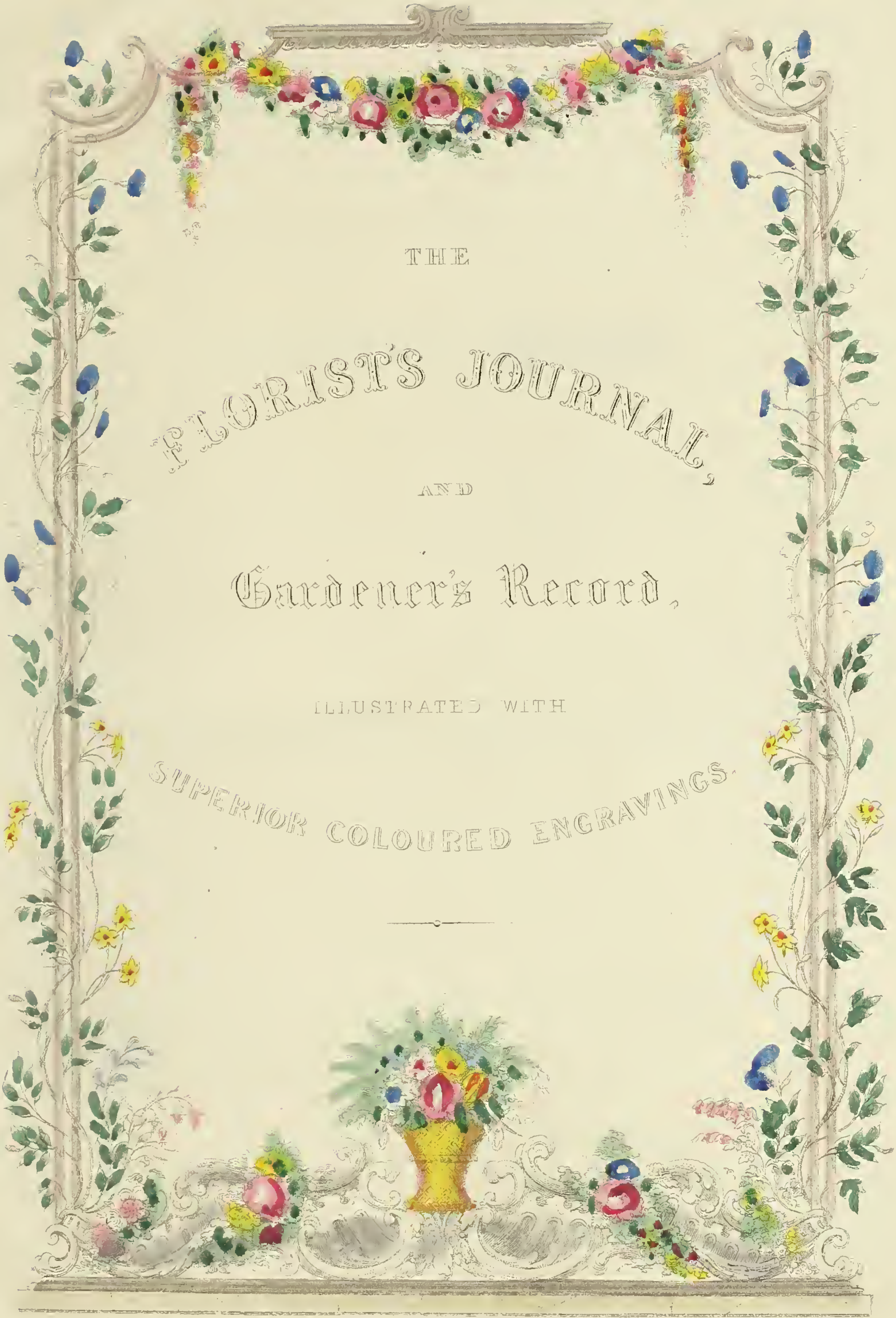

THE

FLORIST'S JOURNAL,

AND

Gardener's Record,

ILLUSTRATED WITH

SUPERIOR COLOURED ENGRAVINGS.

Alfred Adlard, sc.

LONDON: R. GROOMBRIDGE & SONS.

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A PRACTICAL BOOK OF REFERENCE FOR ALL
WHO HAVE GARDENS.

ILLUSTRATED WITH COLOURED ENGRAVINGS.

[Vol 9]

TO WHICH IS APPENDED THE

DICTIONARY OF HARDY TREES AND SHRUBS.

LONDON:
R. GROOMBRIDGE AND SONS,
PATERNOSTER ROW.

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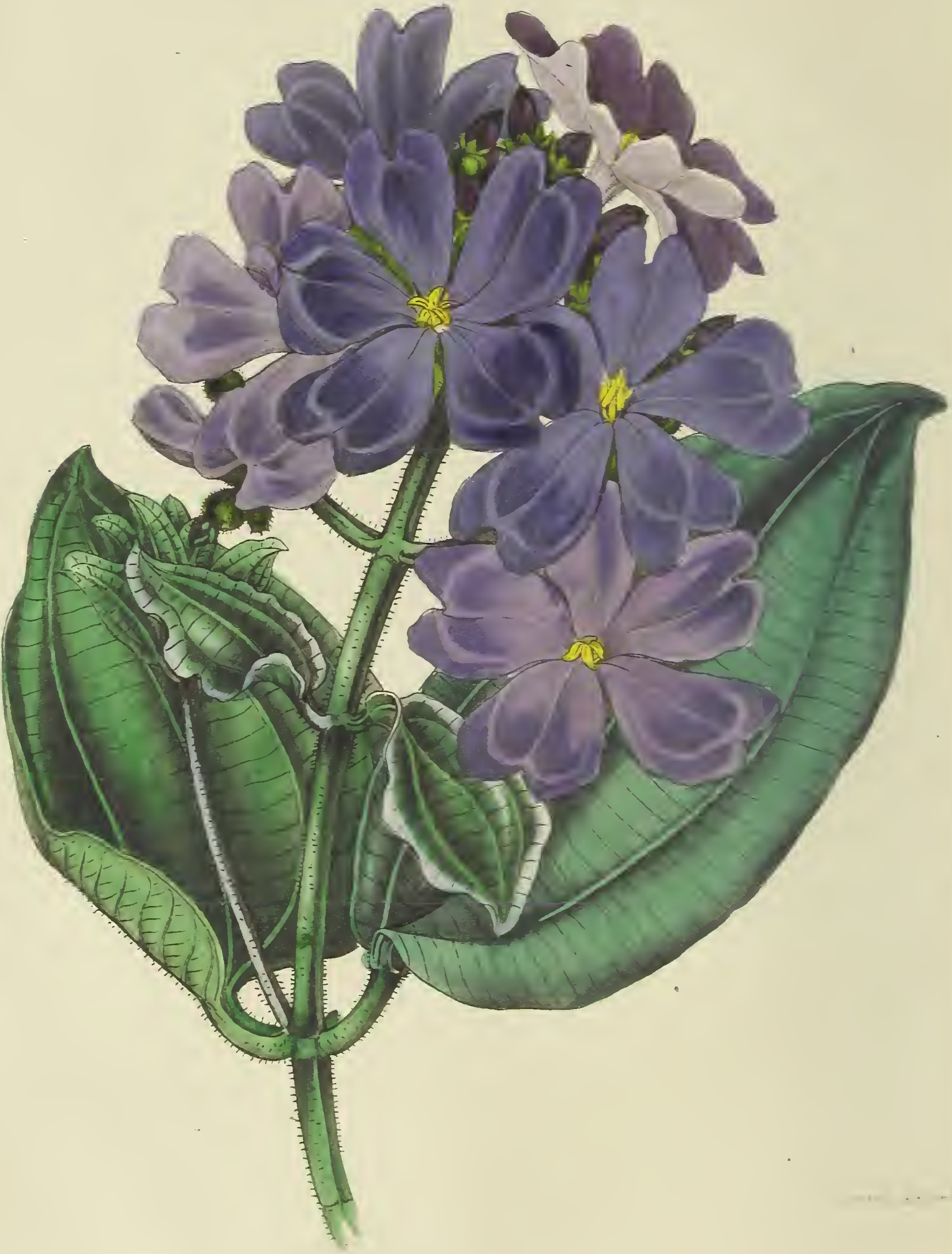

PLEROMA HETEROMALLUM

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SUBURBAN GARDENS.

THE increase of suburban erections within the last few years has so greatly extended the particular style of gardening included in the same term, as to raise it to a consequence its otherwise limited capacities would have precluded, and regarding it now as the means by which sensations the most pleasurable are conveyed, in the air of comfort and adornment made to surround the houses of the most numerous and influential class of our fellow-countrymen, there can be no error in assigning to it an importance at least equal to that attaching to any other department of the fine arts. The fairest proportions of the architect may in vain display the most elaborate completeness, the most lavish expenditure of money and skill will fail to please, till the productions of nature are brought to soften down the asperities, and as it were *clothe* the erections of art. It matters not what the size or pretensions of any residence may be, or hardly what its situation, the eye of taste wanders unsatisfied till the harmonizing effect of vegetation relieves the unpleasant feeling of vacuity or want of finish, and the anomaly of a house in the country without a garden is removed.

A garden contributing so much to the combined effect, it follows that through it we may heighten or mar much of the beauties of the entire scene, and this introduces the necessity of some principle on which we may safely proceed, without incurring the danger of finding at the close of our labours that the general object we desired is lost. Gardens of the class we are speaking of are usually of limited extent, generally in form a parallelogram, and often of disproportionate length to the lateral extension, the "frontage" being the most valuable portion of the ground. What to do with such a plot is often a matter of most perplexing difficulty; each time it is looked at, the interminable and obtrusive right lines drawn by the boundary walls or fences seem to be more closely approaching each other, till a significant extension of the elbow conveys an idea of the dreadful consequences of a collapse. "This must be altered" is the first exclamation; "but how?" you cannot take a piece from either neighbour, even in exchange for part of the long length spread out in tantalizing continuance. Here it is that the first principle of suburban gardening steps to the aid of the almost despairing operator; by its assistance the difficulty is overcome, and all that before was ugly is rendered pleasing; here, as in all other works of art, it must be consulted, studied, and made the foundation of the entire design; it must appear in every part and pervade the whole; without it nothing is complete, and through it the utmost detail may be accomplished with ease; this first, great, and all important principle is—Proportion. Without attention to proportion, all that is done will seem to be disjointed and out of place; harmony of parts cannot occur without proportion to the whole; and the first thing to be settled in the arrangement of the long narrow garden we were speaking of, is the length that will wear a proportionate aspect to its breadth—there the view must be broken—the exact spot may differ in the opinion of perhaps all called upon to point it out, but that there is a limit beyond which proportion will not pass is unquestionable, however taste or other circumstances may incline us to vary it. So also this principle must regulate the size and number of walks, beds, lawn, and should be carried even to the consideration of what is to be grown therein.

Much more might be said on the importance of proportion, but the individual who possesses not an inherent perception of its value and extent is beyond our reach, and ought not to be permitted the opportunity of displaying his vagaries, while to those who can appreciate its presence, we need only say, insist on its observance throughout. Before we dismiss the subject, however, it may be well to mention a few instances that have recently occurred to us, in which the total absence of regard to proportion has rendered some otherwise meritorious works perfectly ludicrous; taken at random, the first which recurs to mind is a large mass of rockwork, composed of pebbles and small flints, a horizontal sundial of exquisite workmanship, requiring steps to enable one to see its face, a standard rose tree of ordinary dimensions, the sole occupant of an extensive lawn standing in the centre; a pyramid of some thirty feet in height placed in a garden scarcely three times its length; the main walk of a large garden so narrow that two persons can scarcely walk abreast on it, besides numberless others, that from their frequency we are led to regard as minor offences, and at last to overlook, as in the case of small plants in large beds, narrow edgings to wide walks, and their opposites.

The next essential characteristic of a well-arranged garden, is "union of expression," or, as it is familiarly expressed, the "keeping." In the narrow compass of a suburban garden, there is seldom room for more than one design, and that is usually comprehended in a single glance; should there exist a want of harmony between it and surrounding objects, the error is immediately detected, and its keeping is defective; some care is therefore necessary that we do not offend in this particular. If the general outline is so palpably evident, and the space so circumscribed that it cannot be excluded, we should rather endeavour to preserve an union of expression between it and succeeding objects, than attempt any departure which must result in a glaring opposition; thus, in the paralellogram before mentioned, whose outline cannot be obscured, it will exhibit decidedly better taste to continue the same form in the adjoining border or path, than to break out into sinuosities before the intervention of some breadth of lawn has prepared us for the change. There are some who assert that, in strict keeping, the style of the garden should be of the same character as that of the house, as for instance, if the latter be Elizabethan, Gothic, or the more fanciful Swiss, so should the garden; but there are reasonable objections to be urged against this, and its adoption would limit the range of taste to a mere rule and line affair; we think the aspect of the occupants of a garden deserving of quite as much consideration as the style of architecture adopted in the erection of the residence, and they will be found altogether so much opposed to straight lines, that the utmost concession we can make to an assimilation with matters of the sort, is the continuance of parallel forms till a sufficient distance is secured to introduce the more natural, and consequently graceful, curve. Attention to the effects of perfect keeping will go far to prevent the incongruous jumbles we sometimes witness in the planting of gardens of this class; it is wholly or in part a flower-garden, a grove, or whatever other general character may be chosen, and as such should be furnished; the introduction of forest trees in a parterre is not a greater absurdity than much that may be detected every day in this respect. What we would particularly urge is, that not only for effect sake, but also for the welfare of the plants themselves, every natural group should be so stationed, as not to interfere with the adjoining family. The size of the premises will, if "keeping" be regarded, prescribe pretty accurately what is most fitting to plant: trees that form the chief feature of one garden, would in a smaller be completely out of place, and, where flowers should prevail, the injudicious employment of an excess of evergreen shrubs, however ornamental they may be in other positions, would here create a gloom not easily repressed; in order therefore to attain the desired end, union of expression must be preserved by a strict observance of proportion between one part and another, and the several parts with the whole.

Beside these fundamental principles, there is yet another matter, which in itself exercises a considerable influence on all the ulterior enjoyment of the work: we allude to its finish. If the word "keeping" can be understood to convey the signification usually assigned it in connexion with matters of the kind, "finish" surely expresses our present meaning; by it we intend not only the execution of the work, but the proper settlement of such matters of detail as are not comprehended in the broad principles with which we set out; the term may be said to include almost all extraneous ornament, for the introduction of vases, fountains, grottoes, and similar objects, cannot be said to form part of the original design, though they have considerable effect upon it, and to this finish we must often look for no small amount of the pleasure derivable from the whole. In villa gardens, matters of the kind are peculiarly effective; indeed so general is this feeling, that the probability of error exists chiefly on the side of overdoing them, a regard to their fitness for the proposed situation, and a careful observance of the proportion they should bear, will, however, secure that union of expression so desirable and necessary to the perfect finish, which alone can be satisfactory to a correct taste.

MELASTOMACEOUS PLANTS.

WITH A FIGURE OF PLEROMA HETEROMALLUM.

Some recent papers by correspondents on certain natural families of plants, which, from causes not easily explained, have fallen into neglect, appear to us so well directed, that we desire to second their tendency, and have selected the group denominated Melastomaceous for the purpose. That fancy or taste, as the more polished phrase is, has much to do with the prevalence of certain descriptions of plants at particular times, cannot be denied; a kind of fashion leading cultivators to prefer at one time what they reject at another; but we also think this preference may be the result of cultural inattention. That some families possess greater attractions than others is positive, but the point to determine is, have we yet seen all that are despised and neglected in their best condition? It is a truism beyond controversion, that the art of gardening has advanced most rapidly of late, and were a comparison made between present specimens and such as used to be grown, even of the identical species, an ordinary observer would not believe them to be the same, the difference arising from good treatment being so great; if this be correct of some of our best plants, and no one who can remember the standard heaths, the scraggy geraniums, the pole-like crassulas, or the dirty stunted leaves and meagre flowers of all or either which used to be regarded as the *ornaments* of plant-houses, will or can deny it; may not something of the kind attach to those groups at present regarded merely as old and worthless lumber? may they not be yet as the last race of gardeners left them, their value unknown, their beauty unappreciated, because never drawn forth by the fostering hand of careful skill? if such is the case, and we do not doubt it with the majority, we are not without hope of witnessing their adoption.

The family forming the subject of the present paper is rather an extensive one, containing nearly thirty genera, many of which are of considerable size, and having an extensive geographical range, it would indeed be strange did it not contain something worth the care necessary to grow it to the best condition. To show we are not singular in the opinion that the order deserves more attention than it has hitherto received, the following description of it by the late Mr. Loudon may be adduced: "All these are remarkable as handsome tropical shrubs or trees, with large purple or white flowers, and leaves with several costæ or nerves, as they are incorrectly termed. The species are generally ill-treated in collections, where they are not unfrequently to be found under the form of sickly, stunted plants, instead of noble, broad-leaved, spreading shrubs, with masses of brilliant flowers." Believing, then, that the utmost care will be amply repaid by the greater part of the group, we cordially recommend them to notice, and leaving that part of the subject, proceed to describe what we know of them and their treatment.

The whole of the order, with the exception of the North American genus, *Rhexia,* are stove plants, derived from the East and West Indies, Sierra Leone, South America, and China, requiring, in consequence, an elevated and humid atmosphere in the active season, and a marked change when the growth is completed; for, like all other tropical plants, these insist on a preservation of the leading features of their native clime, and any great departure therefrom causes so much derangement in their progress as to render a return to healthy action both difficult and precarious: but the main dependencies once mastered their management is of the easiest kind. The nature of the seasons in tropical countries cannot be too often or too forcibly impressed on the minds of those who undertake the care of the vegetation of such places: they are of two kinds, which are commonly known as the rainy and hot seasons; the commencement of the first is marked by a comparatively low temperature, which continues till much of the rain has fallen, it then rises rapidly, till by the time a cessation of rain occurs, the country through its influence is filled with a vaporous atmosphere, most dense at night, the effects of which in particular places may be correctly likened to those of a vapour-bath. The same influence, however, which vaporized the moisture of the earth, by its continued action exhausts the superincumbent water, and then commences the dry season, the first part of which is exceedingly hot, the temperature being higher than at any other time; the exact duration of either phase is uncertain and variable, but the heat again declining brings us back to the beginning of the wet season; about six months being occupied in the course of the two periods.

In our stoves we may readily imitate this rise and fall of the temperature, with the accompanying increase and diminution of moisture; and at the first glance it may appear extraordinary how any error can arise, this simple course of the seasons being understood; but a difficulty does arise in the circumstance of our having to extend each to double its natural limit. For convenience sake, we make the wet or active season to begin in spring, continuing it till Midsummer, when the best and indeed only opportunity occurs of an approach to the commencement of the hottest period of the tropics; the declination of our summer and the succeeding winter answer well enough to the subsequent changes experienced by the plants when in a state of nature, except as regards their length, the excess in that particular is often productive of trouble; the plants by force of habit will make an attempt to grow in winter, or a little mistake in watering starts them into a perplexing development at Midsummer, just when we deem them settling into the desired state of rest, both cases originating in the difference between the natural and our prolonged seasons; to meet and obviate such occurrences constitute the chief part of the skill requisite in the culture of Melastomaceous plants; those which grow at such improper times do not flower, and hence, in all probability, the occasion of the bad name and neglect under which they suffer.

The course we would adopt is to repot all the plants at the beginning of the growing season, and as several of the genera are remarkable for a vigorous development, they should be pruned closely back, leaving only one or two eyes on the base of the preceding year's growth, placing them merely on a shelf in the stove till they have begun to grow. From the time their first leaves are seen till the entire growth is complete they will require every encouragement; the pots should be plunged in a moderate bottom heat, plenty of water given to the roots, and frequent syringing will be beneficial to the foliage; repotting will be necessary at least twice in the time, and attention must be paid to the training of the shoots as they are produced. By June, large handsome specimens will be formed under such treatment, with branches from one foot to four in length, according to the habit of the plant, and in every case they ought to be clothed with leaves to the margin of the pot; at this time, or soon after, the resting period should commence, when the best position for them is a cold pit, kept close for a few weeks, and afterwards gradually opened till the plants stand in an ordinary greenhouse temperature; this, with moderate supplies of water, will carry them safely through till the time arrives for their readmission to the stove, which taking place in September, a few weeks of the increased warmth experienced there will bring out the flowers, and their continuous display will alone render the erection pleasing through the whole of the winter.

Propagation is readily effected in spring by inserting moderate-sized cuttings in sandy soil, and plunging them in a brisk bottom heat. With such as the greater part of the species contained in *Pleroma*, *Melastoma* and *Osbeckia*, the finest specimens will be produced by plants only two years old, after which they become too large for ordinary collections. The subject of the accompanying plate was selected as the most familiar illustration of the order conveniently obtainable; it is one of the best of our winter flowering plants.

FORCING THE GENUS DIANTHUS.

In the genus named in the heading of this paper we are presented with a group of handsome sweet-scented subjects, second in popularity to nothing but the rose, objects of attention and admiration among all classes, but especial favorites with the florist and fair sex. The carnation, picotee, pink, and sweet William are included in it, besides a host of species which, having so far escaped the "mutilating manipulations" of the florist, remain in their native simplicity, awaiting the time when, for want of other novelty on which to try his hand, the same much-abhorred individual of botanical doctors may please to attempt their *improvement*. On this head, however, I have nothing to advance on the present occasion, desiring rather to show how those which have already, and to so great an extent, enjoyed his favour, may be made to contribute to our pleasure at a season when "rude

Boreas" would, without the intervention of some most cogent reason, lock their treasures fast in the embraces of the inscrutable future. Thanks to the master minds which discovered warm air to be lighter than the nipping north wind, and cold water to be heavier than "hot without," which invocation must include all who ever troubled themselves with the bothering category of flues, chunk, vesta, or any other stoves, pipes, gutters, or tanks; and lastly, the great Polmaise itself—honour and praise be to them; for, by some or other of their contrivances, we may contrive to render cheering and pleasant no small portion of our "brief span," that must previously have been wrapped in gloom, to say nothing of the gastronomic rarities which the forcing department of a garden places in our way.

But to proceed. The forcing of pinks is a common operation, and being some years ago much gratified with the freshness and fragrance of a bunch of their blossoms, gathered in March, I was led to imagine what would be the delight with which a bouquet of their more specious brethren, the carnations, would be viewed under the same circumstances. The idea pursued me—I was induced to make inquiries as to the best mode of attaining my desire, but met with very little encouragement. The general impression seemed to be, that they were too impatient of heat to bear forcing, till an old practitioner flattered me with the following: "If you don't hurry them, you will succeed." This was to be the groundwork of my future operations; and, in pursuance of my determination to attempt their forcing, certain of the strongest stools of the more common varieties were selected in the blooming season and set on one side for the purpose, omitting with them the usual process of layering. These plants, to the number of a dozen, were treated much the same as the other portion of the stock. They were placed in frames along with the layers, and had water and air at the same time and in like proportion till the following February, when, with all the feelings of an anxious adventurer, I introduced them to the forcing-house, at the same time holding roses, lilacs, bulbs, and all the other usual occupants of such a place at such a season. My carnations grew—oh, how they grew!—but they would not produce a single bud; one or two abortive attempts at a flower-stem made a fugitive appearance, and thus terminated my first season of forcing carnations. Just as I had condemned the plants to the "tomb of all the Capulets," my old adviser made me a visit. "Ah," said he, "you have hurried these poor things to death." My measures were then detailed and freely criticised. The next season saw me again at work among the carnations, for forcing; but I began sooner and in quite another manner. This time they were gone over before the blooming season, and all such as seemed suitable were removed to the shade of a north wall and the bloom-stems picked out. This induced a vigorous development of side branches, at least three weeks earlier than usual; consequently, by the middle of September, I had extraordinarily strong plants, and following the directions of my cultural mentor, they were brought from their shaded retreat and placed in the sun, and that too on short allowance of water, that they might, as he quaintly observed, "have a holiday."

When the autumnal damps and cold nights began to occur, the plants were taken to a frame devoted to them alone, and being allowed plenty of air in the daytime, were carefully covered over at night, adding, as the cold increased, mats over the glass, and admitting a gradually decreasing amount of air, till in January they were continually shut up, and at the end of the month, being determined to "hurry" them no more, I took them to the greenhouse instead of forcing them out of hand at once. On a warm shelf they stood for four whole weeks, without betraying the slightest inclination to "move," not the least change taking place, except what occurred by the decaying and removal of the lower leaves, and I had just come to the conclusion that I certainly was not "forcing carnations," when, having arrived at near the middle of February, a few sunny days occurred, some pale green leaves insensibly crept up the hearts of the plants, and in a fortnight they were in active growth; the flower-stems were soon after visible, and just at this time my old friend called again. "Now give it 'em," he exclaimed; adding somewhat parenthetically, "cautiously, though:" he had evidently learned the ardour of his pupil. Accordingly to the forcing-house they were taken, one or two at a time, at intervals of a few days, and being stationed at the coolest part of the place, they were liberally supplied with manure water, and again they grew most rapidly, but this time in the right part; the "due maturity" of which I had heard so much was evidently secured, and in four weeks more the blossoms were developed.

I shall not stay to speak of the emotions originated by the unfolding of the petals, or the exciting first glance at the broadly-expanded richness of a "Colcutt's Brutus;" those who have no experience in pleasures of the kind will not understand them, and those who do know them need not be reminded, for the recollection never leaves the mind once awakened to the pure delight and honest triumph of such a position. I had overcome the adverse seasons, and beheld one of the most beautiful of Flora's gems as a reward for my exertions; all the intellectual senses were gratified, at the same time a lesson was presented to the moral man, on the advantages of properly-directed perseverance, and my gratitude increased to him who had guided my first skill-less endeavours.

In the following season I determined to avail myself of the force of habit which had been partially engendered in the plants now flowering, and, therefore, as their beauty declined, instead of throwing them away, they were carefully nursed in frames, and, being repotted, continued to grow through all the early part of summer, and being rested, were placed on the approach of winter into the greenhouse at once; that year I had them to bloom in February, and by careful attention I find the same plants may be forced in three successive seasons, each year being somewhat earlier to flower than the preceding. Along with the carnations, and under the same treatment, I now cultivate pinks, picotees, the mule pink, and indeed any other member of the genus I happen to meet with, and find the essential point in forcing them to exist in their preparation, by suppressing the inclination to bloom at the natural season, and in inducing a state of dormancy at an earlier period than is usual, carefully remembering through every stage "that they must not be hurried." The object in forcing flowers being to produce a display of blossom, of course we do not look for the quality which should distinguish them at their natural season, and therefore I select the older plants in preference to layers, because they are bigger and produce more bloom.

An Amateur Subscriber.

WATER AND WATERING.

The important effects producible from this powerful agent in horticulture, and the destructive consequences traceable to its mismanagement, invest it with an interest that may well excuse an often repeated notice. The office of water in the economy of vegetation is mainly the preparation of such solid matters as are taken into and ultimately form part of the plant, by a process of maceration, which reduces them to a form easily absorbed by the spongioles. Formerly an idea was entertained that water of itself was the principal food of plants; but every authentic attempt to make them exist on the pure fluid proving abortive, we are led to the conclusion that its functions are more correctly those just described; it is certain that in no other way can the presence of earthy matters at the extremity of the most distant and slender branch be accounted for, and they are universally present through the whole fabric of the most noble denizen of the forest as well as in the frame of the humblest weed, forming the basis of the more solid parts, unless we admit the action of water in presenting them to the roots for absorption, and by them discharged to the opposite extremities while in a state of solution. If, then, vegetation depends to so great an extent on the presence of this element, and every day's practice fully proves its power, it becomes a subject of the first consequence to know the kind of water most proper to apply, and the most judicious mode of application.

Water, in a natural condition, it is well known, differs to a considerable degree in quality, according to the sources whence it is obtained; for horticultural purposes it may be considered of two kinds—spring water, or that derived from wells, ponds, and streams, and rain water. The latter is to be preferred, because of being free from hurtful impurities. Spring water, in its passage through the several strata comprising the geological formation of the locality it is derived from, in most cases becomes more or less impregnated with their several characters, assuming, where the nature of the soil favours such a development, variations of the several forms known as carbonated, sulphureous, and chalybeate waters. The last is most common, and most to be feared as an application to plants. Holding, as it does, the sulphate or carbonate of iron, its corroding, poisonous effect on their roots may be readily imagined; and as well might a dilution of vitriol be employed as the frequent use of such water. That taken from rivers or streams is most open to this objection; and if, in its course, it is observed to flow over frequently recurring beds of the kind, which may be easily detected by the rusty deposit, that water should be avoided. At the same time it must be remembered, we are not seeking for positively pure water, but only for such as shall be free from injurious properties; and hence, in the absence of qualities of the kind described, river water is likely to be more beneficial than any other, from its containing a larger proportion of disintegrated animal and vegetable matter, accumulated in its passage, the admitted character of which is that of a powerful manure. Well-water has none of this, and that taken from ponds but very little, while the latter is often so filled with the sporules of Marchantia and other aquatic weeds, that its employment is certain to be followed by a coating over the whole surface of the soil, pots, &c., of green, slimy vegetation, disgusting in appearance and injurious in tendency, by excluding air to the soil, and, through it, to the roots.

Besides the relation to its chemical properties, water has to be considered in a mechanical sense, and especially as regards its temperature when applied to the support of vegetation; its effects in this respect are always great, and the consequences of an extreme error become apparent in a very short time; as a rule, the temperature of water should be somewhat above that of the earth it is applied to, rather than below it, especially in the winter season, when the abstraction of heat associated with and consequent on the presence of an extra amount of fluid would be most severely felt; even in summer when the proper balance is more quickly restored, no greater error can be committed in relation to this subject, than to pour upon the roots of a parching sunburnt plant water that is much colder than the earth in which they are located; the consequences are nearly identical with what would take place in the animal system, and not unfrequently the result is death.

The provision of tanks or other receptacles for water, required in the culture of plants, is then as essential as the most ordinary operation; these should be situated so that, either through the influence of the sun or other means, the water may be raised to the required temperature; for open-air culture when water is not often wanted except in summer, the heat imparted by the rays of the sun may be regarded as sufficient, and the supply being stationed for some hours where it may receive their influence will be fit for use when required, but for plants grown in glazed structures and subject to a constantly elevated temperature, some more certain means must be devised. A very general practice is, to keep the supply in tanks sunk beneath the floor of the house, and covered closely in; now, unless this kind of receptacle can be stationed within the influence of the apparatus employed for heating the erection nothing more absurd can be imagined; to suppose that water so situated can equal in temperature the atmosphere of the house, or be anything better than that at the bottom of a well, is decidedly erroneous; for any addition of heat it is intended to be indebted to the atmosphere of the house, and from that it is effectually excluded by the covering, usually a wooden flap, the absolute impossibility of water so placed becoming warmer must be apparent.

The necessity of an equality of temperature between the soil and the water being granted, we must in reason place them both under the same influences, and from the circumstance of water being a bad conductor of heat, we should allow them to incline most favorably towards the latter; to accomplish this, the water tank instead of being buried should be elevated if possible above the heating apparatus, or if the arrangement of the house will not permit of this, it should either stand on the floor so that the atmosphere of the erection may have an effect on all sides, or if the sinking it out of view is insisted on, it must positively stand so near to the fireplace as to become sufficiently warmed through its whole contents in a few hours after being filled; in no case, however, should it be covered, unless of a size to cause apprehension of too much moisture in the atmosphere of the house, a circumstance by no means probable in any ordinary case. In forcing-houses where much moisture, both at the roots of the plants and in the form of vapour, is constantly required, the supply of water and its position in the house are important considerations, that the required abundance may always be at hand in a fit state for immediate use; and in every case the tank should be so constructed, that the rain-water falling on the roof of the house may flow into it, for, as was before remarked, this kind of water being comparatively free of impurities is greatly to be preferred for the more delicate objects of the cultivator's care.

In our application of water, we undertake a very important office, requiring constant watchfulnesss, great care, and a rather extended knowledge of the physiology of plants; a thorough knowledge of the subject also embracing an acquaintance with the physical character of the country from whence each plant is derived; it may be that some will exclaim:—Surely it cannot be necessary to possess all this information in order to determine when a plant is dry, and therefore wants water; but however ordinary the occurrence, there can be no question that on it hinges the entire art of cultivation. For a basis to these observations, let us again look to the functions of water in the growth of plants when in a state of nature; it enters into their systems more abundantly than any other substance, both at the roots and through the pores of the foliated parts, it gives elasticity to every portion, it prepares and assists in the assimilation of the more solid food, performing, in the last respect, functions the most important of all; some notion of the quantity which enters into the composition of ordinary plants, may be ascertained by weighing a healthy branch with its leaves, of such a subject as the Pelargonium, and after reducing it to ashes by means of fire, again weigh the residuum; by carefully conducting the operation, all the solid parts may be retained, and nothing will escape save in the form of vapour; the water taken into the frame of a plant does not, however, remain there, but is continually being imbibed and respired, a sprig of spearmint weighing twenty-seven grains, having been found to exhale, on an average, not less than ninety grains of water daily for a long period, and a sun-flower of three feet in height, has been ascertained to evolve nearly two pounds of water in a day; such a quantity being transmitted from the frame of any plant, it follows an equally great supply must be presented in order to meet the waste and keep the plant in vigour. This action of inspiration and respiration, varies considerably in different families, for there are certain vegetable forms which may be preserved in all their vigour for a very long period without access to moisture of any kind, so also it differs at times in the same individual according to the season or affecting circumstances; structural variations may serve as a key to the requirements of plants in this respect, where anything of their physiology is known, as for instance those remarkable for coriaceous leaves, and a general indurated or "hard-wooded" habit, give off a much smaller quantity of moisture than will be observed among soft-wooded plants, or, to be more familiar, a Pelargonium will emit a greater proportion of moisture than a Heath, and consequently in its cultivation, will require more water to be supplied to it than would be beneficial to the other plant; the evaporation is found to proceed from the leaves, and in proportion to the texture facilitating its escape and the extent of surface, so will the amount of moisture range.

If specimens were taken from each of the great families having the same stature or exposed surface, it would be found that herbaceous plants, or those composed entirely of leaves, emit the largest amount of moisture; next to them would be placed the suffruticose, to be followed by the ligneous, and at the opposite extremity would occur those which are destitute of true leaves, as the cacti; and so in the cultural management of a whole year, the quantity absorbed would be found to present exactly the same ratio. But, as before remarked, the variation of seasons makes a great difference in this respiratory action, and here we require the geographical knowledge previously mentioned; in our gardens are collected specimens of the vegetation of every known part of the world, and what are the agencies by which we are enabled to imitate the several climates from which they have individually been obtained? Simply, heat and moisture; by the judicious increase or diminution of these, we may keep together and enjoy in one small spot the products of the four quarters of the globe. The application of heat is more readily understood, because of its tangible effects on our own persons, but to place all these plants together in the open air and expect them to thrive, is not more unreasonable than is the practice of that person who would treat them all alike with regard to the other agent, moisture, by "watering them when they are dry;" it is, in effect, the same, for in either case they are severally expected to conform to one climate and one season; such a case, it is true, is but a supposititious one, but it may serve to illustrate the necessity of knowing something more than the mere name of a plant before a competent acquaintance with its culture can be fairly claimed.

In those portions of the earth enjoying a higher temperature than our own, the seasons are usually more marked in character: they change suddenly from extreme drought to the opposite one of humidity; they have no spring or autumn to prepare and bring about the change in the gradual manner common to our climate; the vegetation of such places is at one time lying languid on the face of the parched ground, or having completed the seasonal object of its existence and laid in its due store of food, has retired into the bosom of the supporting earth, where it remains undisturbed for a period, varying from one to three months, till the recurring rains of the succeeding season awaken its dormant vitality to another period of activity and enlargement; and as the first is distinguished by a total absence of development, so is the latter marked by a strength of growth altogether unknown among the vegetation of more temperate regions; this extraordinary vigour is traceable, beyond question, to the season of decided repose previously enjoyed by the plant, which, by enabling it to thoroughly mature its tissue, has prepared it most efficiently to discharge the functions of its existence in the next active period. Now to keep a plant naturally constituted to meet such decided changes, and therefore requiring them in a state of constant excitement, is to weaken its vitality, and ultimately to wear it out. There is a period in the lives of all plants, which, according to the character of the country of which they are natives, is either of annual or more frequent recurrence, in which they require repose, or a cessation from growth, and in which the maturity of the recently-formed parts are completed, the embryo of the next development is formed, and a general vigour infused into the system necessary to the perfection of all the parts; it is at this time that the floral organs of most plants are formed, and unless we provide the opportunity for their formation by allowing the plant a season of rest, we may look in vain to the future for their appearance. How to ensure this repose is by removing the exciting agents; reduce the supply of heat and moisture, and the plant will naturally seek the rest necessary to the restoration of its powers; bearing in mind that in degree it must vary with the nature of the subject, some plants require to be completely dried, others only partially so, while another portion can hardly be said to cease growing altogether at any time: these distinctions experience must point to; there is no royal road to the acquirement of the cultural art, but long, unwearied, patient perseverance, assisted by acute observation and correct deductions are all required, ere a man is fitted to be intrusted with the application of water to plants of anything more than mediocre value. Practical convenience induces the winter to be chosen as the most suitable and, in our climate, most natural period for thus resting the plants; and though it may not exactly agree with their native seasons, yet the force of repeated constraining will tell upon the most obstinate, and in a few years even imported plants may be had to sink into the desired dormancy as readily as those which have been accustomed to the period through the entire course of their existence. In the present month the very depth of repose should prevail, to continue which must be the cultivator's chief aim, till the return of increasing light and heat may again arouse his charge. Beware, then, of the water-pot; injury the most inconceivable may be inflicted by any excess; and better, much better, it is to err in giving too little than in giving too much moisture; the former may be repaired, the latter never. Among such plants as positively require it, give a thorough soaking, and then wait till they are again dry; one watering of this kind, though it occurs but once in several weeks, is better and safer than continual applications of small quantities. The mechanical power of water upon vegetation, which we have next to consider, applies most forcibly to this part of the subject. Plants in pots, of which it is understood we have been most especially speaking, are, as regards their roots, very unfavorably situated; they are confined on all sides to a very limited quantity of earth, and unless the proper porosity of this is preserved, but little air or warmth can ever reach them, both of which are vitally essential; the mechanical action of water is by its presence, being a denser body, to exclude air, and thus if by repeated applications, we keep the soil or any part of it wet, it follows that air cannot penetrate therein; this is the usual condition of plants subject to the little-and-often system of watering; they are surrounded by a mass of mud into which the life-giving warmth of the atmosphere can make no progress, and the roots perish by reason of its absence; but if water is given in sufficient quantity to pass completely through the soil, passages are opened throughout the mass, the superabundant moisture quickly passes off, and the spaces just occupied by the fluid are quickly filled with air, the porosity of the earth is preserved, and the roots continue healthy; in this condition it is hardly possible the plant should suffer by excess, because means are preserved for its egress, while by the opposite method the danger is continually present.

HORTULANUS.

DESCRIPTIVE LIST OF NEW PLANTS.

SOLANEÆ.—*Pentandria Monogynia.*

Chænestes lanceolata (Miers). The seeds of a fine flowering specimen of this were sent by Mr. Purdie from the mountains of Quindiu, marked "a very beautiful shrub," and so it has proved. The young plants grew rapidly, and were planted out against a wall in the Royal Gardens in the summer of 1847, where they blossomed, and continued to produce their umbels of rich, deep blue flowers, till the cold of autumn injured them. These flowers, in colour and general appearance, bear considerable affinity with *Iochroma tubulosa* (*Habrothamnus cyaneus*), but this truly belongs to Mr. Miers's new genus *Chænestes*.

It is a shrub four to five feet high, with rather large oval membranaceous, acute, slightly downy leaves. The flowers are produced in axillary, or rather supra-axillary umbels; they are drooping, the corolla two inches long, rich, deep purplish-blue, cylindrical, glabrous, somewhat dilated at the mouth into a short, five-toothed, spreading limb. Stamens and style scarcely exserted. —*Bot. Mag.* 4338.

SCROPHULARINEÆ.—*Didynamia Angiospermia.*

Browallia speciosa (Hooker). Had not the name of *grandiflora* been preoccupied we should gladly have adopted it for the present new species of *Browallia*, which we had the good fortune to receive from our collector, Mr. Purdie, who discovered it on the mountains of Tolima and Quindiu, in the year 1846. The flowers are thrice the size of those of *B. grandiflora*, and the segments of the corolla are not retuse, nor bifid, but acuminate. It flowered in September 1847, both in the stoves at Kew, and in those of Sion House, being derived from the same source. The corolla is hypocrateriform; tube long, slender, twice the length of the calyx; limb oblique, and somewhat two-lipped; of five large, spreading, ovate, acuminate segments, striated pale lilac beneath, dark purple above, throat white.—*Bot. Mag.* 4339.

GENTIANEÆ.—*Tetrandria Monogynia.*

Exacum tetragonum tricolor (Hooker). An East Indian plant, for the seeds of which we are indebted to J. E. Law, Esq., of Tanna, Bombay. He finds it growing profusely in the Coucan, among long grass. The seeds being sown in the autumn of 1846, produced flowering plants in the stove of the Royal Gardens in June 1847. The blossoms are highly ornamental; but, as the plant is annual, it may prove difficult in some seasons to ripen the seed. The flowers are borne in a cyme or panicle, and are variable in size and colour; usually the petals are large, obliquely obovate, acute, purple, more or less deep, and white at the base. The plant attains about a foot in height.—*Bot. Mag.* 4340.

GESNERIACEÆ.—*Didynamia Angiospermia.*

Gesneria triflora (Hooker). Tubers of this Gesneria were sent from New Grenada by Mr. Purdie, and flowering plants were in perfection in the Royal Gardens in the summer of 1847, continuing a long time in blossom. The flowers are by no means so copious as in the *G. Houdensis,* to which the species is in some respects allied; but the corollas and foliage too are larger. The flowers are produced three together on elongated pedicles, which unite in a solitary axillary peduncle; the whole is woolly, and the corolla is densely clothed with shaggy red hair, the mouth contracted, spotted; the limb of five, short, spreading, rounded lobes.—*Bot. Mag.* 4342.

RUBIACEÆ.—*Pentandria Monogynia.*

Gardenia nitida (Hooker). From the stove of Messrs. Lucombe and Pince, who raised it from seeds taken from a dried specimen gathered by Mr. Whitfield, at Sierra Leone. It proves to be a perfectly new and most distinct species, possessing handsome, dark green, glossy foliage; flowers among the larger of the genus, pure white, deliciously scented; the calyx furnished with large leafy segments; the corolla of the purest white, its limb cut into seven long segments, which are soon reflected. Though shrubby, it is eminently suited to pot culture, and deserves a place in every stove. It blossoms in October and November, and will probably be found to do so at other seasons.—*Bot. Mag.* 4343.

ERICACEÆ.—*Decandria Monogynia.*

Thibaudia Pinchinchensis β glabra (Hooker). Our plant was raised from seeds sent from the elevated mountains of Columbia, by our collector, Mr. Purdie; and it flowered first in the greenhouse at Sion, in September 1847. The species is eminently beautiful, with its bright green, rather ample foliage, and rose-coloured flowers, larger, and as waxy, as those of any heath.

According to Hartweg, it becomes a large shrub (six to twelve feet high).—*Bot. Mag.* 4344.

ORCHIDACEÆ.—*Gynandria Monandria.*

Stenorhynchus cinnabarinus (Lindley). For the knowledge of this rare plant we are indebted to Messrs. Loddiges, who received it from Mexico, and flowered it in July last. The dull olive green of the bracts belonging to its large compact spike, the vermilion red of the flowers externally, and the bright yellow of the inner face of their narrow spreading points, give them an appearance unusually gay among these terrestrial species.—*Bot. Reg.* 65-47.

Oncidium amictum (Lindley). A native of Brazil, whence it was received by Messrs. Loddiges, with whom it flowered in April 1847. Its large yellow flowers, more or less spotted in many parts with rich brown, give it a very handsome appearance. It is nearly allied to *O. Gardneri*, differing from that species in having an inversely wedge-shaped lip, much larger basal lobes, only two pair of tubercles on the crest, large column wings, and an anther head, surrounded as it were by a membranous frill.—*Bot. Reg.* 66-47.

Cymbidium eburneum (Lindley). The flowers of this charming plant are not only among the largest of the genus, but among the sweetest. They resemble in fragrance those of the Chinese Cymbid, than which nothing is more delicious. The species has flowered with Messrs. Loddiges, by whom it was imported from the East Indies. The flowers are five to six inches in diameter; and not a spot interferes with the pure ivory white petals, except one long yellow stripe along the middle of the lip.—*Bot. Reg.* 67-47.

Oncidium curtum (Lindley). We received this new species in July last from Messrs. Veitch, without any account of its history. The beauty of the plant renders it desirable that it should be better known. At first sight it looks like *O. crispum* or *Forbesii,* but, in reality, it is much nearer *O. pectorale.* From that species it differs in the following particulars: 1, The flowers are smaller; 2, there is more brown in the sepals and petals; 3, there is a broad brown border to the lip; 4, the space between the auricles and expanded part of the lip is very short, with parallel edges; 5, the auricles are broader; 6, the tubercles of the crest are much more broken up, and differently arranged; 7, the anther is downy; and 8, the lateral sepals are nearly united to the point.—*Bot. Reg.* 68-47.

Gongora maculata tricolor (Lindley). There are two accounts of the history of this variety of Gongora: one, that it came from Peru; the other, for which we have the authority of the late Mr. Clowes's gardener, is, that it was detected by J. Maclean, Esq., of Lima, on the mountains near Panama, in 1841, and by that gentleman presented to the Liverpool Botanic Garden, from whence Mr. Clowes obtained it in 1842. It is a most beautiful variety of *G. maculata.* The ground colour of every part of the flower, except the lip, is clear yellow; the column and petals are delicately banded with rich Sienna brown, and a few large, clear distinct blotches of the same colour occur on the sepals. The lip itself is white, with a cinnamon stain on the ends of the lateral tubercle and the sides of its upper half.—*Bot. Reg.* 69-47.

Oncidium pelicanum (Martius). This plant is very closely akin to *O. reflexum,* from which it differs principally in the sepals and petals being less blotched, in the lateral lobes of the lip being smaller in proportion to the intermediate segment, and in the tubercles of the crest, which is smooth, not downy, being rather differently arranged. The name has doubtless been given in allusion to the column, which is not unlike a pelican pecking her breast. It is a native of Mexico, whence it was introduced by Messrs. Loddiges.—*Bot. Reg.* 70-47.

Sobralia macrantha splendens (Rollison). This is a very beautiful variety of the now generally known *S. macrantha*, having somewhat larger and deeper coloured flowers. It flowered in July last with Messrs. Rollison, the eminent nurserymen of Tooting, who purchased it among other plants at one of the sales of South American Orchids collected by Mr. Skinner. We believe it is a native of Mexico.—*Pax. Mag. Bot.*

THE SEASON.

The extraordinary mildness of the present season is matter of conversation in all places, exceeding even that of 1845. The following is a list of plants we have seen in flower in the open air within the last few days, in the neighbourhood of the metropolis. Rhododendron hybridum, Roses of the Provence class, Cynoglossum glochidiatum, Gentiana acaulis, Snowdrops, Verbenas, Furze, Picotees, Wallflowers, Linum perennis, Laurustinus is flowering beautifully, Scarlet Pelargoniums, Potentilla uniflora, macrantha and grandiflora. China roses are in full bloom in all positions, and self-sown annuals that have remained in the borders undisturbed are from four to six inches high, many of them showing their flowers, so that should a day or two's sun occur, we are likely to witness a complete transposition of the seasons at Christmas. The prevalence of a humid atmosphere for so long a period makes the plant-grower feel anxious for his charge, in many places the effects of damp are becoming visible. Verbenas, Heliotropes, Scarlet Geraniums, and other bedding plants are suffering considerably ; Heaths, too, evince their want of brighter weather. The usual remedy of an occasional application of fire-heat is almost powerless this season, or if employed to an extent that would be appreciable, consequences very nearly as bad as those required to obviate will soon become apparent, for, beyond question, the plants so treated will begin to grow, and then we do not see that their condition would be at all improved. At the present time (December 22) a fall of snow seems to be threatened, which, for out-of-door vegetation, will be most beneficial, if of sufficient depth to protect them from cutting winds and frost, which their present excited state is by no means fitted to meet, and which the approaching change in the year may lead us reasonably to expect.

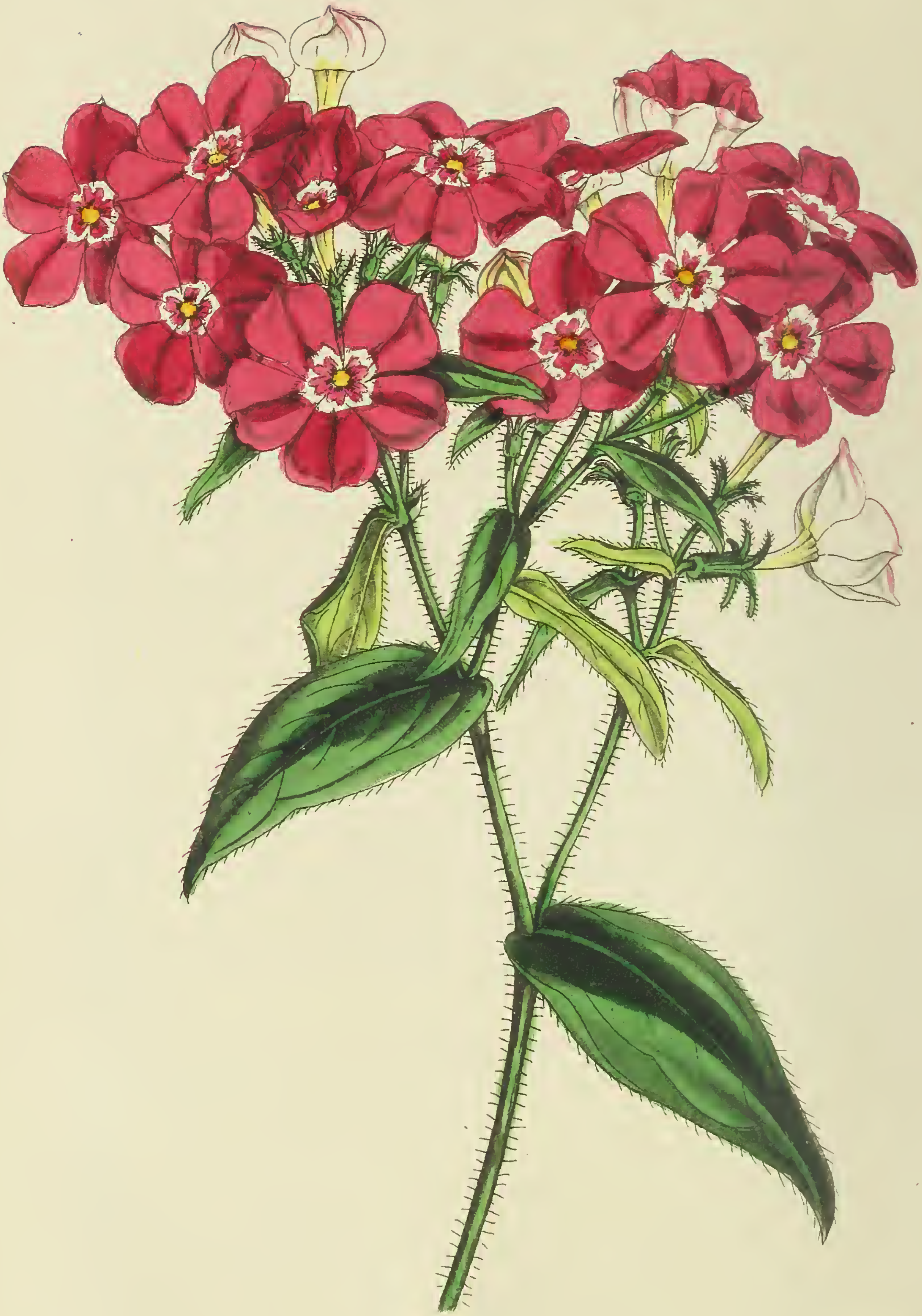
CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS—JANUARY.

Fruit Department.—Previous to planting a new orchard, or quarter of fruit trees of any description, care should be taken to have it thoroughly drained, the drains being placed lower than it will ever be advisable to trench the soil: trenching is then the next point, and it should go as deep as the nature of the subsoil will allow, say three feet, if possible. The earth should be regularly mixed, not the top spit buried, and the bottom, good, bad, or indifferent, brought to the surface. Manure should be added if the ground is poor, but not too freely, as the young trees hardly require more for the first year or two than a little well-decomposed spit dung and fine soil mixed, and placed about their roots when planted. In planting, be careful not to place the roots too deep, especially in stiff wet ground, where they should be raised above the general level of the surface on hillocks of prepared earth large enough to accommodate the first year's growth, or nearly so. All trees should be strongly staked and tied immediately they are out of the planter's hands; and they should also be mulched with long litter beyond the extent of the roots.

Pear, apple, plum, cherry, and other hardy fruit trees should be pruned as soon as possible where not yet done; the same with currant and other small fruits; but the peach and other tender sorts need not be touched unless the season be very mild, in which case they should be pruned, nailed, and protected as early as possible. The walls should also be cleaned and repaired where necessary.

As it is at all times necessary for the gardener to be on the alert against insect enemies, he should take advantage of the present season to examine the last year's shoots of the pear and apple trees, and remove such as are infested with rings of the eggs of the lackey-moth, more especially on small or recently planted trees. On large trees the only course that can be adopted is to carefully collect the prunings and char them for mixing in the compost heap. By these means, numbers of the caterpillar of this moth, which is so destructive in some seasons, might be materially reduced. Quickset hedges should also be examined, and if found much infested, might be clipped now and the clippings charred.

D. M.



PHLOX LEOPOLDIANA

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TENDER ANNUALS.

WITH A FIGURE OF PHLOX LEOPOLDIANA.

In the class of plants denominated tender annuals are included some of the most beautiful of our summer flowers, certain of them very popular, as the Balsam and Cockscomb; while others, with at least an equal claim, are rather strangely neglected; we regret being obliged to notice this declining attention to a very lovely group; but the fact is patent, that within the past few years a supineneness has been exhibited towards them that ought not to exist. It is matter of further and deeper regret, that mere fashion should be permitted to exercise so much influence as to completely banish so large a proportion of the vernal ornaments of our gardens; but to no other cause can the declining culture of these plants be fairly attributed: they are as beautiful as ever, and the same occasion for their presence continues, as may be evidenced in the unfurnished appearance of many greenhouses during the period their regular occupants are enjoying the unconfined atmosphere of summer. Let us hope the subject will receive a reconsideration, and that ere long we may be relieved from the beggarly barrenness of empty shelves in plant-houses at a time when every other part of the garden is redolent of life and beauty. We would even go so far as to offer a hint to the influential Societies established for the promotion of horticulture, to consider if this portion of the great vegetable family does not deserve their protection, and whether it cannot be made to contribute to the general attraction of their meetings; the prestige of such an adoption would at once place them in a position to recover their wonted and deserved importance.

As objects of cultural skill they may be regarded as infallible tests, for exactly as the care bestowed on them is of the right sort and unceasingly given, so will they flourish; it is true their existence being of limited duration, a degree of skill secondary to that required for more persistent subjects will suffice, or rather the amount of patient perseverance is less, though while they are in hand there must be no lack of attention, or it is immediately evident; and therefore we think them deserving the distinction sought in a place on the schedule of horticultural prizes.

Among the most ornamental of the class are species from the following genera: *Browallia, Balsaminum, Cosmanthus, Celosia, Mesembryanthemum, Portulaca, Schyzopetalon, Phlox, Rhodanthe, Schyzanthus,* and *Triptilion;* it may be necessary, however, for the benefit of beginners, to enumerate the particular kinds, as in some of the genera these plants are of a different character. Those we usually grow are *Browallia elata,* and its white variety; *Balsamina hortensis,* the garden balsam, in twelve varieties; *Cosmanthus fimbriatus,* a delicate dwarf plant, with pretty white flowers; *Celosia cristata,* the cockscomb; *Mesembryanthemum tricolor,* or more properly *pyropæum; Portulaca Thellusonii* and *splendens,* the first red and the latter purple; *Schyzopetalon Walkerii,* a singularly fringed, white flowering dwarf plant; *Phlox Drummondii,* of which our present illustration is a most beautiful variety; *Rhodanthe Manglesii;* and all the species of *Schyzanthus,* preferring such as *S. Hookerii, Priestii,* and *retusus.* It may be urged, these are not all tender annuals, because some of them will grow and flower in the open air; but this is no criterion, because there are many other things will do the same, as, for instance, pelargoniums, petunias, verbenas, and a host of others, which are far from being hardy plants, and when the best attention is given to those enumerated, however luxuriant they may occasionally be seen out of doors, we are certain they may be better when grown in pots and protected. The effects of good culture may be familiarly exemplified in the case of the balsam; a comparison between those which have met the care they deserve, and others left to chance in the open ground, will at once establish our assertion; in speaking of the superiority of potted plants over those turned out, however, it may be well to explain we do not refer to the miserable starvelings sometimes met with, which having been once potted are supposed to be done with, but such as have been skilfully *grown;* let the attention necessary to obtain good balsams be given to all the members of the class, and the result will be a display of beauty scarcely to be equalled.

The course of culture to be observed with the members of the genera, *Phlox, Rhodanthe,* and *Schyzanthus,* differs somewhat from that necessary to the other portion of the group, inasmuch as to secure the strongest plants it is best to sow them in autumn; this should be done early in September. Fill a pan with light rich mould, scatter the seed evenly over it, and barely cover the latter with some of the finest of the compost, and set it in a cold frame; if the seed is good it will vegetate quickly, and as soon as the young plants can be handled, they should be potted singly into small pots, and returned to the frame; the best description of earth for wintering tender things of this nature is a mixture in which loam predominates, sand or peat may be added to secure its permeability, but the retentive nature of the loam precludes the necessity of frequent watering in the dull months, when mischief from excessive moisture is most rife. These plants after being nursed in the frame a sufficient time to become thoroughly established in their pots, should be gradually hardened till they will bear a full exposure to the atmosphere, and at the time the main body of the plants are returned to their winter quarters, they should be stationed on a warm light shelf in the greenhouse, elevating them as near to the glass as is convenient; there we must leave them for some months, till the spring-sown plants require attention. About the end of February a good hotbed should be prepared for raising the other members of the group, and if this is ready by the first week of March for the reception of the seed, with a steady heat of about 70°, the plants will grow rapidly, having the advantage of the progressive increase of light and warmth in the season: at the time of sowing these, attention must revert to those in the greenhouse. They will now require larger pots and fresh; mould let it be given without delay, and consist of such materials as will form a rich porous body; plenty of root room is essential to their perfect development, and though another shifting may be thought of, by no means restrict them in this stage. Those in the hotbed must be potted and repotted as they advance, so as to preserve them from any check, their progress being one uninterrupted continuance of growth in every case except that of the cockscombs: these must be somewhat differently treated: the chief aim in their culture being to obtain large heads of flowers on dwarf stems. Experience teaches us that to alter the natural character of the plant and prevent the extension of its stem, it is necessary to restrict the supply of food till an inclination to bloom is superinduced; let them, therefore, be kept in small pots till the flowers can be seen, then pot them largely, and the aliment taken up is at once absorbed by the blossom, and the stem remains in its dwarfed condition.

A brisk bottom-heat is to be maintained throughout the period the plants are retained in the frames, admitting on all favorable occasions an abundant supply of air; and, as the warmth of the season increases, this may be extended to the entire removal of the lights through the day, till in May the entire collection may be placed in their blooming pots, returning them to their former stations till room is made in the erections destined to receive them finally.

The subject of our accompanying plate is one of the many handsome varieties, lately originated, of the pretty *Phlox Drummondii,* for the opportunity of publishing which we are indebted to Messrs. Henderson, of the Pine Apple Nursery, Edgware Road. Being a seminal offspring, it will require to be perpetuated by cuttings, which strike readily in the summer and autumnal months. In other respects it may be treated in the manner usual with its parent.

EARLY FLOWERING BULBS.

The great value universally attached to the hyacinth, and the trouble taken to have it in flower at an early period of the year, are sufficiently convincing, that a taste prevails for flowers of the kind; and believing this, I beg to point out a few that, in my opinion, are at least its equal in beauty, and have the advantage of being more manageable. There are many plants abundantly established in certain localities, and deserving every care for their intrinsic loveliness, that are yet, from some reason, but little known among the general run of gardens, as has been shown by several of your correspondents lately; and to this class belong many of those I am about to name; the obscurity in which they are plunged is, I think, traceable to the apathy of dealers, many of whom, instead of seeking out the truly valuable and placing them prominently before the public, either run after novelties with little else to recommend them, or confine themselves to the commonest articles that have been supplied without intermission for a century: such men are among the first to complain of a want of business, while they seem to me to neglect the best means of increasing it. It is true there are some who should be expceted, but the stricture applies to a very great majority, to whom I would remark, that to retain the trade list in its old-fashioned limits, till repeated applications render an addition necessary, must be an error which, it is to be hoped, will soon be amended.

In the following selection, I have been guided chiefly by the adaptability of each plant to pot culture; my object, when the list was originally made out, being to keep a supply of flowers in an ordinary greenhouse through the spring months, and of such as should not require forcing, the means for which not being at hand, a natural succession therefore forms a principal feature in the group; and it will be found, where all are treated alike as regards temperature, that some of them will be continually in blossom through the period specified.

Among the earliest to bloom, and particularly beautiful, are the *Scillas;* this genus is sometimes met with in old gardens treated as a hardy plant, which indeed it is, but its appearance then is meagre to what it puts on when grown in pots with the protection of the greenhouse. To mention them in chronological order, I shall begin with *brevifolia,* a white flowering species which opens its blossoms in January, and continues them for a couple of months. Soon after it the pretty *siberica* is seen, followed by the still prettier *bifolia:* the first has deep blue flowers, and of the latter there are two varieties, the one white, and the other cerulean blue. An enlivening contrast to these is afforded by *carnea* with pink flowers; and in March and April we have *campanulata* and its varieties, blue, white, and red; *verna* and its varieties of the same colours; the beautiful *amœna* with its nodding blue flowers; the season terminating among these plants, with the large *peruviana,* and the lilac *lusitanica.* As one of the earliest, the little *precox* must be especially regarded; its flowers are often displayed under glass at Christmas. All of them have bell-shaped flowers, varying in size from those of a snowdrop, to others as large as an ordinary hyacinth. They delight in a mixture of turfy peat, loam, and sand; the roots should be placed four or five together of the smaller sorts, and a single one of the large kinds, into forty-eight-sized pots, burying them half an inch above their crowns; this should be done as early in autumn as they can be procured, and through the winter the pots may stand under the stage, or in any out-of-the-way place, till the young leaves are seen coming through the soil, when a light airy shelf will be required for them, and till the flowers are developed, they should stand close to the glass, lest the foliage be drawn up in a weakly manner; this is the only point in the management in which it is possible to commit an error. The supply of water must be proportionate to the progress and the state of the mould; they only require enough to keep it just moist, and after blooming, the pots may be set in the open air at the foot of a wall, and remain there till the bulbs are again dry.

Lachenalias are very beautiful from the middle of February till May; the earliest to bloom is *contaminata* which has whitish flowers, and *orchioides*, yellow; but the handsomest of the genus are the species *pendula, quadricolor, luteola,* and their varieties; *pendula* has rich, bright green leaves, blotched with black; its flowers are produced in a spike as large, and in form resembling those of a hyacinth, but rather longer; they are yellow at the footstalk, red in the middle, and green at the mouth; there is a variety of this with leaves of an entire colour. The best variety of *quadricolor* resembles *pendula* in its leaves and mode of growing, but the flowers are larger, and the colours much brighter, especially the red, which in this is nearly scarlet. *Luteola* has flowers entirely yellow, and its variety *maculata* possesses the richly-marked foliage of the first-mentioned species; their flowers continue in perfection for quite two months. Next to them in beauty, and season of flowering, are the species *flava*, bright yellow; *patula*, white and rose; *rosea*, rose; and *racemosa*, white: there are several others, but the above are sufficient, if only a couple of each are grown, to keep the erection gay from March till the beginning of June. They should be potted in very sandy peat, placing three bulbs together, and these should be left undisturbed for several years, as they object to frequent removals, and are easily injured by tearing the roots asunder.

In other respects they must be treated exactly as recommended for the Scillas, remembering these are not quite so hardy, or at least are impatient of frost.

Muscari. Of this genus I found three or four kinds, very useful through March and April. *Moschatum,* the musk hyacinth ; *comosum* and its variety *monstrosum,* the feathered hyacinth together with *botryoides* ; the singular forms assumed by their flowers rendering them very attractive. They, like the Scillas, should be potted early in autumn, rather closely together, and subsequently may receive the same treatment.

Bulbocodium vernum is another very pretty subject, with deep purple flowers, rising about three inches from the earth ; the bulbs should be potted and treated as recommended for Lachenalia ; it flowers from the middle of February onwards for about a month.

In addition to the above, my collection of spring flowering plants contain others that are more commonly grown, as *Narcissus ajax, bulbocodium,* and *poeticus,* the usual varieties of polyanthus narcissi, hyacinths, Van Thole, and other early tulips, and last, though perhaps of the first consequence, a good supply of the several species of Cyclamen, especially of *vernum* and *hederacæfolia ;* these are grown in pots proportionate to the size of the tubers, and are annually shifted immediately they have done flowering ; the soil used is an equal mixture of loam, leaf-mould, rotten cow-dung, and sand ; they are stationed through the summer in a sheltered, shaded spot, and rarely fail to make a good display in spring. Thus the erection without any extraneous aid, is made interesting through the vernal months, without much trouble and little expense.

J. M. Turner.

CERTOCERUS REFLEXUS.

This recent addition to our collections appears to be equal to all that was said of it, and will certainly prove a standard plant. Free in habit, clothed with ample, fleshy, bright-green foliage, and an abundant bloomer, it is sure to be prized, wherever adopted. Its culture, too, is by no means difficult. Any time in summer cuttings may be struck with facility. They should be selected from the young shoots that have grown about three inches long; and if these are taken off with a heel, or close to the older wood, and set into a pot of sandy peat, having a layer of pure sand on the surface, covered with a small glass, and plunged into a moderate bottom heat, they will emit roots in about a fortnight. The young plants, thus formed, should be potted off as soon as they begin to grow, placing them singly into 48-sized pots, and returning them to the hot-bed. The pot recommended may appear rather large, but it is by no means good policy to restrict the food of young plants, for the course is followed by exactly the same results as are visible on the animal frame—a stunted or weakly constitution is engendered, that probably never afterwards is removed. And it must be remembered that this plant has large leaves—consequently a large evaporating surface, and will therefore require a very full supply of food, which must be given in the manner described, mixing up for it, at this stage of its progress, loam, leaf-mould, peat, and sand, about an equal quantity of each. As regards the application of water, some degree of cautiousness should be employed, as, from the commencement, and onwards for several weeks, the plants, by being continued in the hot-bed, will stand in a moist atmosphere, and therefore require less than when, at a subsequent period, they are growing in the hothouse.

If the cuttings have been taken at an early period, say in May, they will have filled the first pots with roots, and require shifting in the following August, when an extra portion of loam should be added to the compost, and pots of a size larger will serve them through the winter. For a month after this second potting they should be kept in a close pit, and at the expiration of that time may be taken to their winter quarters in the stove, where they will only require the usual treatment of ordinary plants in that erection. Early in the following spring they should be again repotted, this time using pots at least twelve inches over, and increasing the strength of the compost by an additional quantity of loam, to the exclusion of the leaf-mould. A situation where they may enjoy a gentle bottom-heat and a surface temperature of about 65° or 70° will then grow them rapidly, and, with a little attention to stopping and training the shoots, handsome plants will be formed by the ensuing June; and then a drier atmosphere, with free exposure to sun-light, will induce the production of flowers. These are produced in cymes from the axils of the leaves, near the base of the shoots. The petals are flesh-coloured, waxy in texture, and singularly twisted backwards; the gaily coloured anthers are then visible. It is important to remark, that the pedicels of these cymes are of long continuance, and bear flowers for several years, just as happens with *Hoya carnosa,* whose flower-stems, it is well known, produce blossoms for several successive seasons. It is, therefore, of consequence to preserve them as much as possible; and, in pruning an old plant, the shoots should only be cut so far back as will retain the bloom-stems and one joint of wood above them. From the rapid manner in which the plants grow under good treatment, this pruning will be required every year, and is best done in spring, when they are potted for the first time, unless want of space renders it positively necessary to reduce them as much as possible when placed for the winter. If to be cut back at that period, they should be previously well ripened, and kept rather dry afterwards, or it is likely they will begin to grow before the season is sufficiently advanced to render their development at all desirable.

In training this plant, the cultivator must begin while it is very young, and, by frequent stopping, secure a good number of branches near the bottom, or all after pains will be thrown away. The thick shoots wear a very unsightly appearance if strained much out of a perpendicular; and, indeed, after the formation of a well-filled base, the less that is done to them the better. The head is sure to be thick enough from the size and number of the leaves.

J. T. Smith.

Oaklands.

POTTING CARNATIONS.

The young florist is always anxious to know how and when to perform this operation: to his mind, the exact quantity of each ingredient in the compost, and the precise period at which it is done, are matters of paramount importance. That a beginner should err in such an opinion is by no means extraordinary; but that those of more experience, who must have observed the mistake, should allow him to continue in error, is unpardonable. To suppose the numberless stands of winning flowers which are to be seen at floral exhibitions in a single season are produced from plants, growing all in one kind of soil, is an absurdity. Every grower has his own peculiar mixture, and to which some of them, indeed, pin their entire faith; but if there are so many variations in the soil known to produce fine carnations, how much greater is the absurdity of attaching such an undue consequence to the minutiæ of mixing this compost, as we find to be still continued by some who would be leaders in the art. And again, I have known six weeks to intervene been the commencement and finish of potting a large collection, yet no difference was observable in the flowers, when the season came for their development. Let me, then, advise the tyro to attain a general idea of their practical management, and trust to the indications of Nature, aided by his own observations and good sense, for the detail.

From the middle of February, and onwards for a month or six weeks, may be regarded as the most fitting time for potting these plants. Here is time enough for a very great alteration to occur in their condition, yet it will be found that some which may have been layed early, been growing in a favorable position, or have been much nursed through the winter, will be quite ready at the earliest period mentioned, while others that were rooted later, or have been roughed in their subsequent treatment, will not require it for several weeks. The state of the plants must or ought to determine when it is most proper to be done: let them begin to grow, and then pot them as quickly as possible.

With regard to the soil, the staple ingredient should be loam: this is allowed on all sides, because it possesses more nutriment than any other natural earth, and because its texture is usually of the peculiar medium description which is at once moist without retaining a superabundance of water; but in this respect, as a very little experience will make apparent, it varies, sometimes inclining to a sandy nature, at others, partaking of a clayey character; it is not then pure, and as one or other of these admixtures may prevail, so will the strength differ, and hence has arisen the practice of mixing other earths, originally intended only as corrections of the staple article, but continued and dwelt upon till the additions have become to be regarded as the most important part. I am not going to propose that these extra matters be done without, for it is next to impossible to meet with loam of the exact quality required; but I only desire to point out their proper relative value. Generally, the soil intended for these flowers requires enriching, and, in its natural state, is seldom to be trusted in a pot; for, besides adding to its strength, it is nearly certain to require porosity, and to these specific alterations, whatever is added in the mixing should principally tend. Sand and manure are the chief dependences, in whatever modification the loam may be desired; the action of the first is so entirely mechanical, that any mistake in its application is scarcely to be apprehended, it must be mixed in proportion to the texture of the other matters, and that which has a sharp rather-large grit is the best, providing it is free from mineral impurities; where it can be procured, river or drift sand is preferable, because it combines both these essentials. Manure, however, acts both mechanically and chemically, and of this empirics have taken advantage to mystify the art by overloading their directions with infinitesimal detail, and multiplying unnecessarily the number of ingredients to form what they call a compost. Animal manures vary considerably in strength, but their relative influence once known, it is preposterous to continue a long formula of small quantities of nearly every kind procurable, when a single larger application will have the same effect; thus in an old recipe we find a peck of each of no less than five different kinds, the relative strength of which when incorporated with the loam, amounts to about two barrowfuls, of ordinary hot bed manure, to obtain which, not a tithe of the trouble is necessary, and the matter is rendered plain and understandable.

No positive rules can in truth be given of the exact quantities of any description of enrichment that may be necessary in the formation of the mixture; and those who attempt it without knowing the quality of the staple, are, in plain language, quacks: everything of the kind must positively depend upon the character of the soil forming the basis of the mixture, for to put the same kind and quantity of manure to a poor soil, as would be proper for a rich one, must be evidently wrong.

Carnations and Picotees delight in a friable generous soil: let the loam be got as nearly this as possible, and the beginner will have no trouble in improving it sufficiently with the kind of sand mentioned, and thoroughly rotten hot-bed manure, depending on the judgment of some one who knows good soil, to determine the quantity of either necessary. Did I know any simpler mode of preparing the compost, it should have the preference, for I am convinced the most elaborate mixtures are in general the least satisfactory.

In working the several ingredients together, a great deal of care is necessary, not only to have them thoroughly blended, but also to observe that no insects escape destruction, especially that dreadful pest the wire-worm, for as certainly as one of them gets into a pot, so surely will it kill at least one plant, and if detected before further mischief is done, it may be regarded as fortunate; these creatures are usually from a quarter to three quarters of an inch long, have a smooth jointed body of nearly equal thickness throughout, straw-coloured, with a small, black, or deep brown head, and are most voracious, killing whatever they attack, as they cut completely into the centre of the stem, and often mine a way up its entire length. Another equally destructive insect, is the gutter grub, a dirty, brown, fat looking thing, nearly three times the size of the preceding, and very sluggish in its movements. Both must be carefully looked for and destroyed, as also should worms and other creeping things. A quantity of fresh lime may be turned in with the mass, which will assist greatly in extirpating these pests, and to ensure a complete riddance of insects from the soil, it should all be carefully examined a single handful at a time, which an active lad will readily accomplish. It is usual to sift the mould, a practice I am opposed to as being useless in clearing the earth of insects, and unnecessary as a means of mixing it after it has been examined by hand, the latter mode performing the work infinitely better.

The pots generally employed are those called sixteens, and are capable of holding three plants. The bottom should be filled for a couple of inches with drainage, on which the roughest portion of the soil is to be placed, and then the mixture till high enough to receive the plants; these must be carefully separated, preserving the roots of each as entire as possible, and spreading them out regularly round the pot, fill up the sides to within an inch of the rim of the pot, pressing the soil moderately firm, give a gentle watering, and the work is complete. From what I have advanced, the beginner will not be surprised to hear, that on the attention subsequently given, most of his success depends; that the compost exercises an influence on the plants is unquestionable, but its greatest effects are visible only in size; purity, regularity, and the many other "points" depending mainly on how they are managed through the growing season.

The best loam I ever obtained, was taken from a pasture field; about six inches, including the turf, was dug and laid in a heap for near twelve months, when it broke up in excellent condition, only requiring the addition of manure, and a careful examination for insects.

Florista.

CULTURE OF THE TUBEROSE.

The season being at hand for beginning the culture of this most fragrant plant, I venture to offer a few remarks on the subject, having been very successful in the management of a considerable number. The first thing is to secure good roots; they are annually imported, the greater part from Italy, and are readily known from such as may have been grown in this country, by their lighter colour; the best are nearly white, the bulb should be large, plump and firm, with as few offsets as possible: one or two small ones are not objectionable, as they help to clothe the bottom with foliage, but such as have three or four, and those of considerable size, should be rejected, as the chances are that each will endeavour to form a flower spike, and none of them possessing sufficient strength, the result will prove an abortion. From the middle of February till the end of March they may be potted in succession, putting a single root into a four-inch pot; the soil should be composed of equal parts loam, sand and rotten manure; the top of an old melon bed, with a little sand added, suits them well. When first potted they may be placed under the stage of the greenhouse, or some other only partially light place, till they begin to form roots, which are usually seen in about a fortnight, and in the mean time a hotbed should be prepared for them, or if cucumbers are being grown they may be placed together; the temperature of the bed should average 65°, and it will be necessary to maintain this heat pretty regularly for a couple of months. On their first introduction they will require no water, the moisture of the bed being sufficient till they have pushed two or three leaves, when it may be applied moderately; but as soon as the flower stem is seen above the apex of the bulb, another course must be pursued: the plant should immediately be repotted, placing it now in an eight-inch pot, or even a size larger if the stem appears strong and promising; the removal must be managed with some care, as they are now very tender, and a rude blast of wind will check them very materially. Having completed the shifting in a warm place, set them back in the frame, at the same time plunge the pots for about half their depth into the fermenting material: this warms the fresh soil, and encourages the roots to penetrate it. Their progress now will be very rapid, and in a few weeks the frame will require to be heightened as the flower stems rise, and from henceforward till the blossoms are expanded; a good deal of care will be necessary to preserve them from the attacks of the red spider, which appears to be particularly fond of this plant, and more than ordinarily destructive in its effects. To keep them down, the plants should be syringed at least once a day, and a moist atmosphere continued about them; and if, notwithstanding these precautionary measures, the insects should increase, a little sulphur may be dusted over the leaves in the middle of a hot day, repeating the application till they are removed, but always washing it off at night with the syringe.

Maintaining an elevated moist heat is, however, best as a preventive, and if this is constantly observed, it is not likely the insects will be troublesome, as they cannot endure vapour, and at the same time the plants will be growing beyond the possibility of injury. If it can possibly be managed to retain them in hotbed till the flowers begin to appear, it will be best for them; but usually they get too high for any ordinary frame, and then it becomes necessary to provide room for them in a pit which can be kept close for a few weeks. In such a place they will do without artificial heat, as the season is now advancing, and by taking advantage of the afternoon's sun may be shut up warm, and a mat over the glass at night will preserve them so. When first brought here the plants should be elevated on reversed pots, or some such contrivance, to bring their points as near the glass as possible, lowering them at intervals as may be required; the object being to have them as dwarf as their nature will admit; and after two or three weeks of this attention the flowers will begin to expand, when they may be taken to the greenhouse or sitting-room; for a few days previous to which it will be advisable to admit rather more air among them than usual, that they may not experience the change on their removal. The continued development of their white hyacinth-like blossoms, and the delicious fragrance emitted from them, will be certain to render then favorites for a long period.

Dalston. J. SMITH.

POLYANTHUSES.

As an admirer of these pretty spring flowers, I regret exceedingly to see so little attention given them. As an inducement to their culture, it may be mentioned, that any one adopting them near the metropolis; and securing only tolerable flowers, would, in the present state of the fancy, be certain to carry all the prizes competed for. The following six may be strongly recommended, and would form a good commencement:

Fletcher's Defiance. Single flowers, exactly circular; segments rather small, perfectly flat; clear, bright, ground colour; a dark brown inclining to bronze near the eye; lacing regular, running completely down to the tube, which is nicely elevated; truss good and regular.

Clegg's Lord Crewe. One of the best; single flowers, large and circular; segments large and equal; very dark purplish ground colour; lacing remarkably neat, fine, stainless yellow, as also is the elevated tube and rather large eye.

Collier's Princess Royal. As a heavy-laced variety this is unexceptionable; the flowers are circular and flat; the ground colour very dark; lacing clear yellow and heavy; tube elevated; and an excellent trusser.

Buck's George the Fourth. Good yellow eye; ground colour rich crimson; lacing neat and regular; pips circular and flat; no fault can be found except that the truss is not always equal.

Stead's Telegraph. Good in every respect, and remarkable for its brilliant, dark scarlet, ground colour.

Mitchell's Lord Nelson. This flower resembles one better known as *Pearson's Alexander*, on which it is an improvement, in being stouter in texture, and consequently less liable to droop, besides which it is larger; the eye is good, clear yellow; tube elevated; lacing regular and neat; ground colour very dark; outline circular, and a good trusser.

F. WHOLMES.

DESCRIPTIVE LIST OF NEW PLANTS.

SOLANEÆ.—*Pentandria Monogynia.*

Solandra lævis (Hort.) Of the four species of Solandra described by authors, not one accords with the present; nor is any now in cultivation to be compared with it for the size, and beauty, and fragrance of the blossoms. It was received from Messrs. Lucombe, Pince, and Co., in November, 1847, under the name here adopted, by which it was obtained by those gentlemen from the continent, without any indication of its introduction to Europe, or of the country of which it is a native, a practice unfortunately general, and which cannot be too strongly condemned. Messrs. Lucombe and Pince find its culture extremely easy in a moderately warm house, requiring nothing but the ordinary treatment of stove plants. Its somewhat climbing stems grow best trailed round a cylindrical trellis. Young plants, not two feet high, produce the noble blossoms. The leaves are thick and glossy, and form an agreeable contrast with the coarse foliage of other Solandræ. The flowers are very large, almost a foot long, solitary, terminal; the corolla is nearly thrice the length of the calyx, funnel-shaped, greenish cream-colour, white at the limb; the lower half of the tube is slender, striated; the upper half bell-shaped, but contracted at the mouth, and there branched and reticulated; the limb is spreading, deeply five-lobed; the lobes reticulated and singularly crisped and waved at the margin. The style only is exserted about an inch beyond the mouth of the tube.—*Bot. Mag.* 4345.

GESNERIACEÆ.—*Didynamia Angiospermia.*

Hypocyrta glabra (Hort.) Although in words it may be difficult to define the distinction between the present species and *H. strigillosa*, yet the two plants are clearly distinct, and the eye will at once detect the differences. I may observe, the present is of shorter and stouter growth, the stem purple, the leaves shorter, almost exactly elliptical, obtuse, of a thicker texture, with very indistinct nerves, and still more indistinct hairs; the corollas have the lower and constricted portion of the tube shorter, and they want the radiating yellow lines around the mouth. The shape of the corolla in the *H. strigillosa* reminds one of the Pouter pigeon; that of the present species, of the globe-fish. Its colour is a rich scarlet, except the small limb, which is orange-yellow. It grows readily in stove-heat, treated like other Gesneriaceous plants, and flowers in June and July. The Royal Gardens owe the possession of it to Mr. Makoy, of Liege; and it is said to have been imported from South America.—*Bot. Mag.* 4346.

Gesneria pardina (Hooker.) The flowering plants in the Royal Gardens of Kew were received from Brazil through Mr. Gardner, who detected the species in the Organ Mountains. It is extremely different from any, either published, or, as I have reason to believe, cultivated in our gardens. In general habit it resembles *G. aggregata*, but is much handsomer; and the spotting reminds one of the flowers of *G. Douglassii*. It blossoms in a moist stove, in October. The corolla is an inch and a half, or more, long, ochrey-red, yellow within, spotted, especially the limb and tube internally, with deep red; tube curved, yellow, and with a gibbosity at the base above. Upwards the tube is gradually dilated. Mouth oblique, but of five, nearly equal, rounded, spreading segments.—*Bot. Mag.* 4348.

ASCLEPIADEÆ.—*Pentandria Digynia.*

Hoya cinnamomifolia (Hooker.) To Messrs. Veitch and Sons, again, we are indebted for the introduction to our stoves of this new and handsome species of Hoya from Java, whence it was sent by Mr. Thomas Lobb. It flowered in July, 1847. It belongs to the same group of the genus with *H. Pottsii*, but it has much more showy flowers, and the nervation of the leaves is considerably different. The stem is terete, glabrous, and twining; the leaves are large, ovate, slightly peltate and acuminate, between coriaceous and fleshy, five-nerved, the three central ones very conspicuous, both above and below. The flowers are borne in a dense hemispherical umbel: they are large and rather showy, from the effect of the different colours of the staminal crown; the corolla being pale yellow-green, and the leaflets of the crown a deep purple blood-colour.—*Bot. Mag.* 4347.

Ceropegia Cumingiana (Decaisne). Received from Java by Messrs. Veitch and Sons, through their collector, Mr. Thos. Lobb. A glabrous, climbing stove-plant, with opposite leaves, which are ovato-acuminate, cordate at the base, often tinged with brown, and with the costa red; peduncle reaching about as far as the middle of the leaf, terminated by a cyme of eight to ten flowers; corolla one and a half to two inches long; the tube contracted in the middle, cream-coloured; the limb chocolate-purple, with apale transverse band; the segments connivent, large. Staminal crown double, exterior of five, short, obtuse, double, slightly incurved teeth; interior of as many elongated, clavato-ligulate ones, connivent, three or four times as long as the outer; all pilose.—*Bot. Mag.* 4349.

LEGUMINOSÆ.—*Polygamia Polyandria.*

Acacia leptoneura (Benth.) Remarkable for its graceful, slender branches, loaded with deep, orange-yellow heads of flowers. It is a straggling shrub of five or six feet in height. The phyllodia (or leaves) are alternate, two to three inches long, subulate, or rather filiform, with a sharp, hooked point, minutely and copiously nerved or striated.—*Bot. Mag.* 4350.

CINCHONACEÆ. *Tetandria Monogynia.*

Ixora Javanica (Paxton.) This very beautiful species bears some resemblance to *Ixora crocata*, but is much superior to it both in flower and habit. It is a native of Java, as its specific name indicates, where it grows in the woods on the mountain sides, and forms a broad spreading bush. It has been lately introduced by Messrs. Veitch and Son through their collector, and appears a very free-growing kind. The flowers are rich orange-vermilion, borne in dense terminal corymbs.—*Pax. Mag. Bot.*

PLUMBAGINACEÆ.—*Pentandria Monogynia.*

Plumbago Larpentæ (Lindley.) A native of China, originally discovered by Mr. Fortune, growing on the ruined ramparts of Shangai; it was subsequently found by Mr. Smith in the same locality, and by him forwarded in 1846 to Sir George Larpent, whose gardener, Mr. Eyles, has grown it in great perfection. The flowers are of a deep rich violet, beautifully tinted in the throat with fine red, and are produced most abundantly in dense heads at the points of the shoots. The plant is of compact, neat habit, and is sufficiently hardy to thrive in the open air through the summer, proving a first-rate bedding plant.—*Pax. Mag. Bot.*

LYTHRACEÆ.—*Icosandria Monogynia.*

Lagerstrœmia elegans (Wallich.) This plant resembles, in some respects, the *L. indica,* but its growth is far more robust, its flowering season much later, and its whole habit, when the two are seen together, very distinct. The blossoms which are rather darker coloured (deep, rich rose, varied with yellow), and a little smaller than those of *L. indica,* are produced in fine, spreading panicles at the extremities of the branches, are exceedingly showy, and continue in perfection for a long time. It is a native of mountains in the East Indies, where it was originally discovered by Dr. Wallich, and by him introduced to the Botanic Garden of Calcutta, whence it reached this country in 1841.—*Pax. Mag. Bot.*

CYRTANDRACEÆ.—*Didynamia Angiospermia.*

Agalmyla staminea. At a recent meeting of the Horticultural Society in Regent street, Messrs. Veitch and Son exhibited a specimen of this fine stove epiphyte. The flowers partake largely of the characters of the Æschynanths; they are individually large, exceeding two inches in length, are borne in clusters of twelve to fifteen at the axils of the leaves, and being of a brillant scarlet, heightened by the rich purple of the exserted stamens which stand out an inch from the mouth of the blossom, are extremely beautiful and attractive. The foliage too is exceedingly rich, each leaf is near six inches in length and four broad, thick and fleshy, of a bright glossy green. It is one of the many fine things received from Java, through Mr. Lobb.

TRIPTILION SPINOSUM.

This charming annual plant is well deserving the attention of all who admire an elegant, airy outline, combined with an abundant floral development. It is a natvie of Chili, from whence it was brought about ten years since, a peculiarity in its character, which will be presently explained, keeping it still scarce. The known temperate mildness of the climate whence it was obtained led us at the beginning to class it with those sufficiently robust to bear the variations of our own seasons: and subsequent experience has proved this assumption to be pretty nearly correct. It is half-hardy, or, in less technical words, is capable of bearing exposure through the summer, but must be assisted with artificial heat in spring, to rear and forward it in the earlier stages of its progress; and, except in the case of prolonged fine weather in autumn, requires the same protection at that period, to enable it to ripen its seeds. Our summers in general are too short for it to attain its utmost perfection; and hence the disappointment tending to its present scarcity, which has arisen where it has been trusted altogether in the open air.

The mode in which it may be made to yield the greatest satisfaction is, by growing it in pots instead of placing it in the ground. Under such circumstances the plant is transferable at any time from one position to another, as occasion may require, and then no disappointment need be apprehended; for, seeing it is only a continuance of propitious weather that is required, it is indeed to be regretted that so fine a subject should be thrown out of cultivation for the want of merely a little protection.

The course of treatment I would recommend is this,—early in March the seed should be sown in pans of light, rich earth, on a gentle hot-bed, such as is usual with plants of the kind. Let them grow about a couple of inches in height, and then pot them separately in small pots, and continue them in the frame till they require repotting, when the removal should be into others large enough for their support through the summer, say ten or twelve inch pots. These should be filled with rather strong, but at the same time, porous soil. Replace the plants in the frame till they are re-established, and in the beginning of June they may be transferred to the borders if required there, or to the greenhouse to assist the ordinary tender annuals in ornamenting that department, which they will do most effectually, the bright blue blossoms having a fine effect; if placed in the open ground, the pots may be plunged entirely out of sight, and if it be a warm and somewhat sheltered spot the plants will grow and flower most abundantly; an advantage is however possessed by those grown under glass, inasmuch as their delicate foliage is preserved from injury, while those exposed to the action of the weather occasionally suffer in this respect. In the house, too, they begin to seed rather earlier, and thus a supply for the next season is secured, while those unprotected, being subject to the vicissitudes of the weather, are often growing to a late period, and unless taken up before the cold of autumn overtakes them, do not perfect their seeds at all. Such plants should be removed to the greenhouse or a cold frame about the middle of September, when, with a little nursing, they will continue vigorous till the end of their existence is attained and reproduction made certain.

As the plant may not be known to all your readers, I will attempt a brief description: it is a branching, suffruticose plant, attaining about two feet in height, moderately clothed with rather small foliage of a bright pleasing green, and abundantly armed with spines in every part; the brilliant cerulean blue flowers are numerously produced near the points of the branches; they are of the composite order, about half an inch in diameter, and continue in perfection a long time; indeed, I am told that when nicely dried they retain their colour for several months.

In the event of the plant failing to produce perfect seeds, it may be increased from cuttings of half-ripened wood taken in autumn, and struck under a handglass; the little plants thus obtained may be kept through the winter in store pots, on a light warm shelf in the greenhouse, and in the following spring will require the treatment of seedlings.

St. Neotts. T. M. HILLARY.

THE CLASSIFICATION OF ROSES.

WE have lately received from Mr. W. Haslam, Nurseryman of Epping, a Catalogue of the Roses he cultivates, arranged in a manner which certainly deserves notice. In the ordinary classification of these flowers, artificial terms are employed, which, like all other arbitrary nomenclature, convey no meaning; they require a glossary, and, until committed to memory, are positive absurdities; for instance, what descriptive idea of the plant or its blossoms, is imparted when we are told it is a "Bourbon," a "Provence," or a "French" rose, unless these terms and their signification have been previously learned? We are aware that all arrangement of the kind is an artificial process conducted on principles of like nature, and only adopted for convenience sake, yet certain leading features do, or should prevail through the several classes, or the combination is without basis of any kind; if, then, these general traits of character have to be examined and settled in the work of arrangement, why not express them in the terms employed to denote the several divisions? It will matter little on what grounds the separation is effected, so far as regards the nature of the terms to be used; they may, under any system, be made expressive of the leading features consulted in the arrangement, and whether the habit of the plant, its seasons, or its style of flowering be most regarded, or even a combination of the whole, surely our vocabulary can supply appellations suitable for either or all. Terms such as moss, perpetual, miniature, &c., are understood because they possess a reference to the plant described; the others have none, and therefore are unmeaning. Mr. Haslam has shown the practicability of some more reasonable classification than at present obtains, and we beg to urge on the attention of Mr. Paul the propriety of reconsidering the existing system, if, indeed, it may claim that distinction, as the subject attaches with peculiar fitness to his excellent work now in progress, 'The Rose Garden:' the invitation may be unlooked for, and perhaps rather abrupt, but the importance of the matter will, we hope, be taken in excuse.

CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS—FEBRUARY.

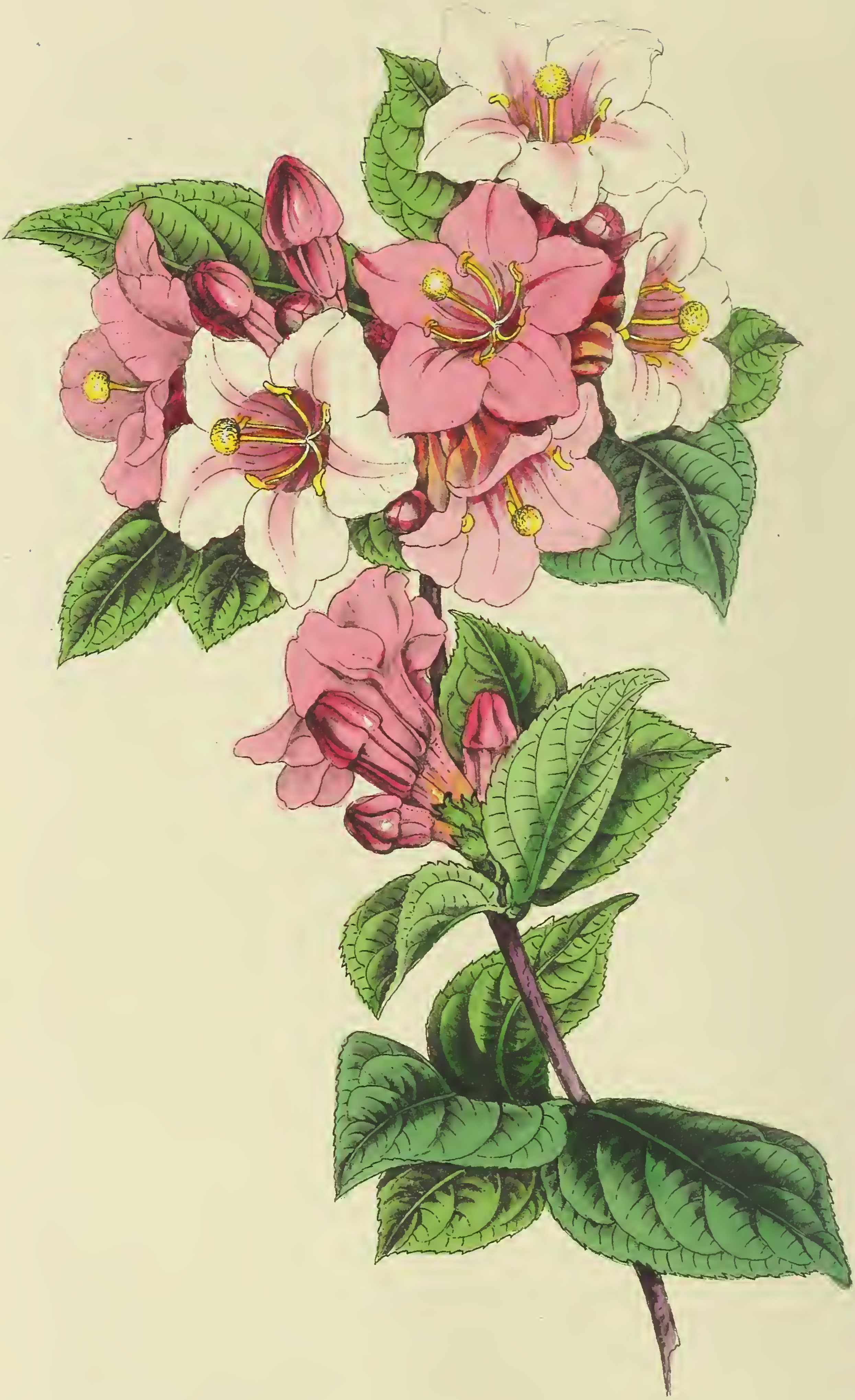
Forcing Department. This month may be regarded as the beginning of the general forcing season. A few subjects, such as cucumbers and grapes, have been begun already where they are required at an early period, but in the majority of places, the commencement is made in the present month. In the vinery and greenhouse the grapes should be pruned without delay, and the former erection must be closed according to the time the ripe fruit is desired; for the first fortnight no fire-heat need be applied, and afterwards the temperature must be increased in a gradual manner; for such vines as have broken into leaves, keep a moist atmosphere either by syringing the pipes and floor, or by making a bed of fresh stable-litter in the house; the ammonia evolved from the fermenting dung is highly beneficial to the vines. French beans require constant attention; successional crops should be sown every third week, and those in advancing stages will require potting as soon as the first leaves are fairly developed; it is usual to put three plants into a twelve-inch pot: they require a brisk moist heat, and must be kept close to the glass; when the plants have grown two joints they should be stopped, to induce bushiness and precocity. The first crop of strawberries may be introduced to heat in the course of the month, previous to which they should be placed in cold frames for some time, and by keeping them closely shut up, the transition is made more gradual; succession crops of these should be forwarded a stage in the manner described. Peaches should be pruned, cleaned, and tied, the house closed, and preparations made for beginning operations in this department. It is not unusual to grow figs against the back wall of this house; in cases where this is adopted, the trees should be nailed in at once. We have also forced raspberries successfully along with peaches; these may be taken up and planted in the borders of the house or potted; the first is most convenient, because the canes can be tacked to the wall. Gooseberries and currants may also be added for the sake of early green fruit.

Fruiting pines will require a high and rather dry heat to ripen them off; the successional plants may be repotted now if necessary, or deferred till next month; a lively bottom-heat must be maintained, and a surface temperature to correspond.

In the melon ground the first requisite is an abundant supply of fermenting material in all stages, from the raw unworked dung to that fit for immediate use, any deficiency in this respect must be carefully guarded against. Cucumbers will occupy a great deal of attention; a seedling bed, as it is called, for raising the plants, should be got up with well-worked dung, and having a sweet steady heat of about 70°; the seed may be sown at intervals of ten days, as it is always best to have plenty of plants, lest an accident happen to any in their subsequent stages; while the young plants are in progress in the seed bed, other or fruiting beds must be prepared, and if the material for them is first turned up when the seed is sown, and afterwards worked over every four or five days, it will be fit to make into a bed about the time the plants are potted, which should be done as soon as they have expanded the seed leaves, and will be ready for their reception in a week afterwards, during which they should have grown two other leaves. The growth of the young plants, and the preparation of the bed for their ultimate reception, must go on simultaneously, that the one may not be waiting for the other, and on the ordering of these matters, much of the looked for success depends; for unless cucumbers grow onwards without intermission or check of any kind, the result is certain disappointment, and it will be better policy to begin afresh than continue the nursing of stunted or weak plants. A few days before the plants are turned out, the soil for them should be placed in the frames so as to become warmed through, and when they are transplanted, it should be drawn up into a ridge, so as to bring them near the glass; a little water may be given at the time, and the temperature kept as near 75° as possible. About the end of the month, the first lot of Melon seed may be sown, which will require similar treatment to that recommended for cucumbers. In all the erections admit air in proportion to the state of the external atmosphere, the desired mean temperature, and the condition of the several subjects to be operated on. Continue to cover up or introduce to one or other of the erections, a sufficiency of rhubarb, sea-cale, or asparagus.

A slight hot-bed should also be made for early potatoes, and when settled to a steady heat of about 60°, the mould may be placed in the frame and the sets planted; on the surface, a crop of radishes or lettuces may be sown, which will be drawn or transplanted before the potatoes require earthing.

Flowers for forcing, such as roses, lilacs, rhododendrons, azaleas, and bulbs, may be taken in succession to the forcing-house; keeping all such plants in frames carefully matted up at night, and in bad weather, as a preparatory step to their intended treatment.



Alfred Adlard sc

WEIGELA ROSEA.

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WEIGELA ROSEA.

WITH AN ILLUSTRATION.

The good fortune to introduce, or the pleasure of making known any addition to our store of hardy shrubs, possessing even but moderate claims to notice, is an occurrence so rare, as to be regarded with particular attention, the greatest number of new plants belonging to a class that can only be enjoyed by a few who possess the required conveniences for their culture ; stove-plants, therefore, however beautiful, must always be of secondary importance, because of their limited adoption. Not so with those of the hardier class ; they are everybody's flowers, with an interest extending to all who care for the healthful and intellectual pleasures of a garden ; they are necessary alike in the small as the large establishment, and every introduction calculated to increase their value must be regarded as a most auspicious event.

The reception of our present subject may then be readily imagined, when we state it to be perfectly capable of bearing the rigours of our climate, and of the freest habit both to grow and flower.

Weigela rosea is a native of China, and we are indebted to the exertions of the Horticultural Society of London for the possession of so fine a thing, it having been discovered by their collector, Mr. Fortune, who met with it growing in the garden of a mandarin, and transmitted it with other rarities to the garden of the Society, where, in April of last year, it flowered copiously. The shrub, for such it is, appears likely to attain a considerable size, as it thrives in the most desirable manner in any ordinary garden soil which has the proper degree of porosity necessary to admit of the spread of roots. In summer it is clothed with neat, bright green foliage, of medium size, and extends its branches equally on all sides, so as to form a round-headed specimen, which, for pleasing neatness, may vie with any other hardy shrub we have. In winter the leaves fall off, the plant being deciduous ; but they reappear early in spring, and are speedily followed by the handsome, rich, rose-coloured flowers, large and abundantly produced ; and at that time the surpassing loveliness of this novelty may be judged of by reference to our figure.

Its cultivation is by no means difficult in any respect, and we may therefore reasonably expect to see it very soon adopted in gardens generally. From the young shoots, either terminal or lateral, which are produced in the earlier part of the growing season, cuttings may be made, which strike root readily, with but little nursing. Those about three inches long, which can be taken with a "heel," or close to their junction with the older branch, are the best; and, after the removal of a few of the lower leaves, they should be, according to the time they are procured, either potted or placed under a hand-glass on a warm border. Those obtained in May or June do best by the first method, and should have sandy peat to root, with the assistance of a slight bottom-heat, when they grow away rapidly, and form good plants before winter; others, taken at a later season, when the sun has warmed the earth to some depth, succeed in the open ground, with only a hand-light to guard them while emitting roots. In most cases, hitherto, the young plants have been protected in frames through the winter, because of their scarcity not permitting any risk; but a correspondent informs us that this is unnecessary, as he has had recent plants completely exposed through the past winter, and they are uninjured. The mature plants certainly do not require it, as is evidenced in the specimen in the Horticultural Society's garden at Turnham Green. It may, however, be advisable to let the autumn-struck plants remain undisturbed till the following spring, as it is well known that the hardiest plants are sometimes injured by frost when lately moved, and while thus situated it will be easy to cover them again, should severe weather render such a step advisable.

The young plants will require to be grown through the succeeding year in pots or beds, before they will be large enough to finally plant out; and during this time the occasional application of water will materially assist the growth of those that are bedded, and such as are in pots should be plunged, in order to keep their roots moist and in a progressing state. They are comparatively small, and soon injured by drought.

As to the position they should occupy, when finally settled, we can hardly conceive one in which they may not be ornamental,—as single specimens on grass, in small groups of choice subjects, or the front of shrubbery borders, the *Weigela* will be equally beautiful. The handsome and numerous pink bells being produced at a season when flowers are yet scarce, make the plant desirable in all situations. It grows, too, in peat, in loam, or common soil with equal luxuriance, and therefore may be associated with any others of the class already established.

The Swedish botanist, Thunberg, founded the genus *Weigela,* which is included in the beautiful order *Caprifoliaceæ,* a group of plants found only in the temperate regions of the earth. Its nearest ally is the genus *Diervilla,* composed for the most part of Japan plants, distinguished by their handsome rose-coloured or white flowers. The Honeysuckle is the type of the order, but is the only one of the number possessing an agreeable odour. *Weigela,* in the Linnæan arrangement, is included in class *Pentandria,* order *Monogynia.*

THE PROPAGATION OF BEDDING-PLANTS.

Wherever the condition of the flower-garden through the summer is a matter of consequence, the most active preparations will be in progress through the present month, as it is now only we are able to judge with any degree of precision of the quantity of plants already prepared for the purpose, and of the extra number yet required; it is seldom a sufficiency is in hand, for though those preserved over the winter and the early spring cuttings may serve for the principal portion, there are usually a succession and casualties to provide for; and after "taking stock" to ascertain what is chiefly required, no time should be lost in making up the deficiency. Those who possess but limited convenience for keeping plants through the winter are obliged to depend mainly upon spring propagation, and where the means of merely preserving them are small, it is not often we find any excess in those for propagating; a cucumber or melon frame is often the only opportunity of allowing the cuttings the additional warmth necessary to their striking—by no means the most favorable position; and this, with the absence of any preparation of the cuttings, will account for great part of the many failures which occur. Necessity made me study the matter, and I offer the following remarks as the result of much experience, with the hope they may save some of the trouble which annually falls upon many who deserve better fortune, and lessen the unmitigated mortification of meagrely-filled flower-beds. In the ordinary course of propagating bedding plants, where the conveniences are no more than those described, the custom is to take the cuttings from the plants in the greenhouse, prepare and pot them, and at once clap them into heat, which, if designed for the growth of cucumbers or such plants, is never less than 70° ; this sudden and very great increase of temperature is more than the cuttings will bear ; they become etiolated, drop their leaves, and, in thousands of cases, die. Another condition, equally important, is overlooked ; in the greenhouse they are growing in a comparatively dry atmosphere, from thence they are taken, deprived of their ordinary means of absorbing moisture—the roots, and being stuck into soil containing but little water, are at once immersed in an atmosphere of floating vapour ; the system of the severed pieces being drained of much they previously contained by the act of separation, can offer no opposition to the rush of moisture into the pores or stomata of the leaves, and thus an unnatural current of watery matter is directed through them, till the disruption of these pores stays the circulation, and then the accumulated and stagnant moisture on the exterior becomes evident in the forms of mildew and "fogging," the fatal effects of either requiring no description. In such cases we must employ like to repel like, and hence the principle of the mode I am about to explain. We cannot always improve or alter the means provided for our work, but we may do much towards rendering them effective by the judicious preparation of the subjects to be operated on.

It must be borne in mind that the class of plants commonly denominated "bedding," are distinguished by an entire or partial herbaceous character ; they are "soft-wooded," and consequently very susceptible of injury by the rupture of their vessels ; at the same time, they are remarkable for the facility with which they accommodate themselves to surrounding circumstances, and so long as extremes are avoided, may be managed with the greatest ease ; taking advantage of this, we should, before removing the cuttings, accustom them to an elevated temperature, by placing the entire plant in a warmer place than that in which it has hitherto been growing ; a week in a close frame without artificial heat will do wonders at this time of year, and by devoting a few specimens solely to the purpose of propagation, and keeping them shut up, a plentiful supply of cuttings may be obtained of the best description, as they will be in a growing state when taken off, which, it is well known to all who have attempted the matter, is half the battle.

To obviate the danger of excessive damp, to which all cuttings are subject when struck in hot-beds, after much consideration I determined to adopt the principle before mentioned; and though the mode is opposed to the usual practice, and, at first sight may not promise much, the success attending it has led me to continue it for several seasons. Starting with the idea that the injurious effects of the vaporous atmosphere of the hot-bed was due to its action upon the stomata, by entering them in an unnatural manner, it became necessary to prevent this action, and knowing that bell-glasses, with their attendant trouble of wiping daily or almost hourly, were ineffectual, I determined to fill the cuttings themselves with moisture, which must necessarily prevent the entrance of any more in the manner to be feared; accordingly, after being trimmed in the usual way, they were stuck into pans filled with very wet sand, which, having no holes in the bottom, retained all the water put in them, and by using enough to form a puddle with the sand, the cuttings, even of the most tender kind, are inserted with the greatest ease. So situated, I found the greatest heat or most excessive moisture of the beds had no effect on my cuttings; in fact, the latter, under such circumstances, merely prevents evaporation through the leaves, and in an incredibly short time each cutting forms a series of beautiful roots, many of them, not only from the base but up the entire length of stem inserted in the sand, and may be lifted out with the hand, without the slightest danger of breaking them. Some care is necessary to harden the young plants after being potted, but the same is necessary by whatever mode they are propagated; and this possesses advantages in being more certain, quicker, and allowing smaller pieces to be used as cuttings, for the least of them are no more trouble than large ones. The method is, perhaps, not suited for winter propagation, but in summer I have ever found it the best.

Essex. J. SMEE.

JASMINUM NUDIFLORUM.

This plant promises to be one of the most useful of recent introductions. It is one of Mr. Fortune's China plants, and emanated from the Horticultural Society's garden in 1845. Additions to our stock of winter-flowering plants must ever command attention, and in this case we have an abundant and brilliant flowering plant for the most ordinary care.

Like all other Jasmines, this delights in porous, yet rich soil, and I find a mixture of peat, used rather rough, turfy loam, and sufficient sand to keep it all open, to suit it better than any other preparation. The plant has angular, spreading branches, which seem to have a disposition to trail on the ground, and thus offer the greatest facility for propagating by layers; and, if this is desired, the shoots may be partially buried in the soil whenever they are long enough, and, without tongueing or other trouble, will form strong plants by the following spring. In March or April they may be taken off and potted singly; and, if accommodated through the summer with a cold frame, will grow rapidly. In the first year of their growth, they do not seem disposed to branch, nor have any of the usual means for inducing this desirable habit any effect upon them, so that we have to wait patiently till the following season before much can be done towards training.

Should flowers appear in the first season of the plant's existence, they are better removed; and in the second spring the usual repotting must be given, which will start the plants into an active growth, and at that time the foundation of the future plant must be laid. By bending the stems rather abruptly in a downward manner, the joints near the base of each branch will throw out other shoots, and, as these become fairly started, the main stem may be lifted, and others, from near the upper end, will issue, and thus the entire length of the existing branches may be filled with new shoots, in the manner practised with vines, and which I find preferable to pruning, inasmuch as there are consequently so many more shoots developed. Through the ensuing summer the plant should grow in a slightly shaded frame, and, with attention to watering and training, will, by the autumn, form a tolerably good specimen, well furnished with flowering branches.

On account of the well-known predisposition of this genus to attacks from red-spider, and to facilitate the keeping a damp atmosphere about the plants in the hot season, I took the precaution to turn the frame in which they were growing towards the north, thus lessening the power of the sun, and, by syringing the floor every evening, managed to keep them pretty clean. They are, however, very subject to both this insect and the white scale. The latter is less troublesome, because more easily removed; but every attack of the former must be instantly repelled, or the production of flowers will be unsatisfactory. About October the leaves fall from the new branches, and in a short time after, from nearly every axil formed by the foliage will burst forth a single flower. Though these are solitary, the position of the buds on a well-grown plant is so closely arranged, and the leaves having grown in opposite pairs, the blossoms are consequently produced in like manner, that the appearance of a branch with its flowers expanded is very nearly that of a spike. Each blossom is almost an inch in diameter, and the segments being stout, so as to lay quite flat, the rich, bright yellow is unclouded in lustre, and renders the plant very attractive. And when it is known that a continuous succession of these flowers is produced through January, February, and March, even in an ordinary greenhouse, it will be admitted that few, if any, of the genus surpass in beauty or value the present species. A great improvement is undoubtedly effected in the plant's appearance, by placing it at the time the leaves fall off in a forcing-house or stove, with a temperature of about 55°. The blossoms then come out larger and stronger; and, with the aid of the extra warmth, a portion of the foliage is also developed, which removes the naked aspect of the branches, as seen in the greenhouse; and, thus treated, it may be had in bloom by the beginning of December.

The trouble taken to obtain the Azorian and Catalonian Jasmines to flower in winter is so great, that no doubt can be entertained of the estimation in which this plant will be held when generally known. Its neat habit, partaking more of the shrubby character than either of the others, and its larger and brighter-coloured flowers, make it decidedly superior as an ornamental plant; yet it is but fair to state, that it is wanting in perfume. With some, however, this will be no objection; and even where the scent of the Jasmine is thought desirable, the other qualities of the plant will in most cases be deemed a sufficient compensation for its absence.

As regards the management of large plants, of course little is yet known; but, from the habits of smaller specimens, in all probability it will always be best to grow them as strongly as possible, and to adopt the downward training in preference to pruning, because of the larger number of flowers thus obtained.

G. Jackson.

ALSTRÆMERIAS.

The recent stimulus given to the cultivation of this exceedingly pretty and curious tribe of plants, by the introduction among us of the many beautiful seminal varieties originated by Mr. Van Houtte, of Ghent, has induced their somewhat extensive adoption for the flower-garden, as well as increased the chance of meeting them in their old position of summer ornaments of the greenhouse; and they are now fast regaining the importance that was once and justly attached to them.

There is an extensive class of the flower-loving community who are in general successful with what they undertake in summer, and at that time are among the most assiduous, enjoying the present labour of their hands, and revelling in anticipations for the future; but, from some cause or other, are yearly doomed to disappointment in the perverse conduct of their charge, which, in spite of fine-weather determinations on the part of their possessors, continue to shuffle off their existence one by one as soon as the dull season of winter commences; to such cultivators, plants like the present offer the greatest promise, for they require no attention in winter. Alstræmerias are tuberous-rooted plants, which grow with vigour, and flower abundantly in summer, and then fall into a state of dormancy, during which they only require to be kept dry and free from frost; most of them are of neat dwarf habit, so that they may be grown in pots, and others, too large for such management, are hardy enough to withstand our seasons in the open ground. Those of the latter class need only be planted in rich earth, and left to themselves, with the single precautionary measure of throwing a little loose litter over the bed in winter, to break off the worst of the frost.

The more tender kinds designed for flowering in pots or for planting in the flower-garden through the summer, should be started in March or April by repotting the tubers and allowing them water; they grow best in a soil composed of loam, leaf-mould, and decayed manure, adding sand in proportion to the texture of the mass; a single root should be placed in a four-inch pot, and an ordinary garden frame without artificial heat may receive them; they soon come up, and then must be watered regularly, and have plenty of air. In May, those for the beds in the open air may be transferred to their places, or, if desirable, can be kept a month longer in pots; but those intended to bloom under protection, must be repotted, and as a dense head of flowers is then required, it will be well to place three or four roots together in one large pot, say of ten inches diameter; the soil at this shifting may be made a little stronger by using less leaf-mould, as it will be found that, though they require to be constantly moist, they are not fond of repeated applications, one good watering in a week being better for them than a little given every day; in hot dry weather, just before they begin to flower, it will benefit them much to sprinkle the foliage every evening with the syringe, as it encourages their growth, and keeps down insects, to whose attacks they are rather liable when under glass, especially of green flies and red spider; the first are easily cleared off by fumigating with tobacco, and sprinkling with water as recommended will prevent the spread of the other pests.

As the stems advance, they will require to be supported with small sticks, which allows a tasteful arrangement of the head to be made, and, by spreading them out equally on all sides, a circular outline may be given, and the blossoms will ultimately be seen all collected to nearly the same level; those in the open ground will be equally improved in appearance by tying, or the branches may, if necessary, be bent in any direction so as to fill the space allotted; beyond this little else is required, and in return a splendid show of flowers will be presented through the greater part of summer and autumn. When the stems decay, the roots should be dried, taken up, cleaned, and put away in dry sand till wanted in the following year. The only attention requisite in winter, is an occasional examination, when, if spots of mildew appear, it should be removed, and the roots further dried for an hour or two. They do better in earth or sand than in bags, as under the latter treatment they sometimes shrivel and die; such as have been grown in pots, cannot, perhaps, be better preserved than in the soil they grew in, without being disturbed at all, only taking care to have it dried completely through. Seed offers a ready means of obtaining a good stock of plants with the chance of some novel variety, and if attention be given to this part of their management, there is every probability of their speedily occupying a place in the florist's catalogue, whose trade seems now languishing for want of some new subject. It should be sown either in autumn as soon as ripe, or the following March; a little heat is necessary to get it up, and the young plants must be potted off as soon as they can be safely handled; if reared in the autumn, they should be kept gently growing through the winter, when a shelf near the glass in the greenhouse suits them best, and in spring their treatment may be assimilated to that of mature plants; most of them will produce flowers the same season. There are some of the species which are commonly called stove plants, but the only difference I ever observed necessary in their treatment, is a little more warmth just at the commencement of the growth; such as these are benefited by using a lighter soil, and instead of loam, peat may be employed. The following are a few of the most desirable, the most tender of which are marked with an asterisk:

SPECIES. *Hookeri*, rose; *tricolor*, white, purple, and yellow; **Ligtu*, white, red, and yellow; *Neillii*, rose and white; **pallida*, rose, and yellow; *Simsii*, scarlet and yellow; *bicolor*, yellow and white; *nemorosa*, crimson and yellow; *magnifica;* red, white, and green *;* *pulchra*, rose, yellow, and white.

VARIETIES. *Formosa*, white and crimson; *candida*, white and rose; *splendens*, red, green, and yellow; *speciosa*, crimson and rose; *magniflora*, orange and green; *aurantiaca*, orange.

L. V. H. T.

HOW TO FLOWER GLADIOLUS CARDINALIS.

This old and very beautiful inhabitant of our gardens is now seldom seen, having fallen into disrepute, owing, as it is alleged, to a coyness of blooming. The main cause of disappointment in this respect is, we believe, attributable rather to an inattentive regard to the plant's natural habits, than to any inherent disqualification in the species. That it is worth a little extra trouble to have it in good order, will be admitted by all who have ever seen it in that condition; the brilliant scarlet, heightened by the clear, spotless white feather which distinguishes the flowers, is altogether unequalled in those of any other kind; and if the following simple rules are observed in its management, the roots may be had to bloom, not merely now and then by chance, as is commonly the case, but as a matter of seasonal recurrence, with a certainty equal to that attending any other member of the genus. In the gardens at Tandridge Court, Surrey, this plant has been long and successfully cultivated, and in other instances which have come under our observation, the same course has been attended with like results. If we observe a bed of *Gladiolus cardinalis* which has been allowed to stand undisturbed through the autumn, we shall find early in October the corms have begun to grow again, and if the strongest are taken up, potted, and protected through the winter in cold frames, nearly every individual will bloom. Now, though we are thoroughly convinced of the necessity of repose to all plants, and advocates of its universal observance, it is plain there are limits, variable of course in their application, beyond which we may not with impunity carry the system any more than we may its opposite; in this case, it seems, the usual period of rest beneficial to most bulbs and even to members of the same genus, is by far too lengthened, the vitality of the plant has been materially weakened, and the utmost its remaining powers can effect is the development of leaves alone, without which it must positively have died; the eight or ten weeks of autumn, during which its corms denuded of foliage have laid dormant in the earth, is repose sufficient to its nature, and the spontaneous growth exhibited in autumn should be regarded as an important hint to the cultivator. If then the roots, as before stated, are carefully taken up, and potted in light soil, such as peat and loam, and kept where they may be just guarded from frost till spring, to be then returned to the borders, there will remain but little doubt of the flowering of every one having sufficient strength ; they do not grow to any appreciable extent in winter, and bear to be closely covered for a week at a time, if occasion should require it ; yet from the advance gained in autumn, they are strong plants at the time they would by the usual method have been only commencing their growth, and thus the summer is lengthened to them nearly two months.

The smaller bulbs taken up at the same time with the others, but not deemed worth potting, may be returned to the bed, and with a thick covering of litter will go safely through the severities of the season, and in the next year most of them become flowering plants. *G. cardinalis* delights in light yet moist soil : it must be light, to allow the roots an easy medium in which to spread in search of food ; it must be porous, to allow the escape of superabundant water, and at the same time it should not be liable readily to become dry ; we cannot therefore give them a better kind of soil than that known as peat, which meets the requirements more nearly than any other. Theory teaches us the absolute necessity of repose to vegetation of all kinds ; but practice sets the limits to be observed with each individual.

FLORICULTURAL HINTS.

March is a busy month indeed with the florist ; every member of his charge requires more or less attention. Where matters have been got forward, we shall find the Auriculas top-dressed, the Picotees and Carnations potted, and probably the Dahlias started ; but if circumstances have prevented the completion of either of these operations, no time must be lost in getting them done. Auriculas after dressing, which may be done with almost any description of compost that is something richer than the soil they are growing in, should be stationed in a sunny sheltered spot, and must be very carefully guarded from frost and nipping winds; after a trial of many contrivances, I am of opinion there is nothing more suitable for their protection from this time onwards through the blooming season than the common hand-light, having a moveable top, unless, indeed, I except a pattern seen in "days lang syne," having one of the sides fitted with hinges, which permitted the admission of air even when it rained. The young florist must be cautioned against too much nursing; the plants must have air and plenty of it, though they are equally injured by exposure of unlimited kind.

Tulips must be carefully protected from frost and hail; at all other times give them air and light. The Carnations and Picotees after potting will not require a great deal of attention. With regard to protection, it must be managed with reference to their previous treatment; if they have been nursed they will still be tender, but if brought up hardy, no particular care will be wanted now.

Pansies may be turned out about the middle of the month, and propagation must go on as soon as cuttings can be obtained.

Dahlias starting in a gentle hot-bed must also be propagated as fast as the young shoots rise about three inches high; take them off, and set each one by itself, in a small pot filled with light rich earth, and plunge it again in the bed.

Roses in pots may be shifted and pruned; give them strong holding loam, with leaf-mould to make it porous, and decayed manure to enrich it and throw colour into the flowers.

FLORISTA.

THE HYACINTH AN AQUATIC.

In my greenhouse there is standing as a central object a small fountain, which in summer is highly pleasing, because of the agreeable feeling of freshness it imparts; but through the winter it has hitherto been rather an eyesore, as it would not do to allow the water to play at such a time, on account of the health of the surrounding plants, and I had entertained serious thoughts of removing it, till the idea occurred to attempt some means of rendering it ornamental; the first effort has been successful. A number of Hyacinths, previously brought forward in glasses, have been furnished with swimming buoys, by passing their roots through a hole made in a piece of cork, and drawing the latter close up to the base of the bulbs; and thus they are now floating in the basin of the fountain, and appear to flourish in their new position most admirably. Their effect is eminently pleasing, and from my success in this matter, I have been induced to try them in another still more novel position. Some of the later bulbs were wrapped in a thick coating of moss, taking care the outer portion was fresh and green, and are suspended from the roof above the others; an occasional syringing is all the attention they have received, and the blooms are now most luxuriant, hanging in a graceful half-pendent manner from the ball of moss, which in itself is beautiful, being brilliantly green, and the long white roots of the Hyacinth protruding at bottom, increase the effect by giving each plant an epiphytal appearance.

January, 1848. T. D.

DESCRIPTIVE LIST OF NEW PLANTS.

Apocynaceæ.—*Pentandria Monogynia.*

Allamanda Schottii (Pohl.) Much confusion exists with respect to the different species of *Allamanda*, of which seven are enumerated in the Prodromus of De Candolle. The *A. cathartica* of Linnæus is called *A. Linnæi* by Pohl, and it is distinguished as a species from the *Allamanda Aubletii*. These are again united by Alphonse De Candolle; both have scandent stems. *A. cathartica* alone, so far as I know, had been introduced to our collections till September 1847, when I had the pleasure of receiving a specimen of a perfectly upright growing species from Mr. J. Stanton, gardener to R. W. Barton, Esq., Springwood, Manchester. They were raised from seeds sent by Mr. Graham, from Brazil, to Miss Barton. Besides the size, beauty, and copiousness of the blossoms, this species has the merit of flowering when little more than two feet high, and in eight-inch pots.

It is an erect, suffruticose plant; the leaves are in whorls of three or four, large, lanceolate, and spreading; the peduncles are terminal and from the axils of the leaves, bearing several flowers forming panicles; the corolla is funnel-shaped, very large, of a rich, full yellow, the lower half, or rather less, forming a narrow tube, thence suddenly expanding into a campanulate faux of a a deeper yellow in the inside.—*Bot. Mag.* 4352.

Leguminosæ.—*Polygamia Polyandria.*

Acacia oncinophylla (Lindley.) A very graceful Swan River species of acacia, flowering in the early spring months, and scenting the atmosphere with its agreeable fragrance. The blossoms, in rich yellow spikes, show more numerously upon the branches than even the leaves. The seeds were sent us by Mr. Drummond. —*Bot. Mag.* 4353.

Verbenaceæ.—*Didynamia Angiospermia.*

Clerodendron scandens (Palisot de Beauvois.) A very pretty stove *Clerodendron,* introduced, together with the following more splendid species, by Messrs. Lucombe, Pince, and Co., Exeter Nursery, from Sierra Leone, through the instrumentality of Mr. Whitfield. The flowers are white, tinged with pink near the centre, exceedingly pretty and copious, and the plant is a climber, well adapted for growth on a trellis in a pot. It flowers in December. —*Bot. Mag.* 4354.

Clerodendron capitatum (Schumacher.) A very fine species, of shrubby, handsome growth; large, ample foliage, varying from four inches to a foot in length; the smaller leaves subovate, the larger ones obovate, oblong, acuminate, undulated at the margin, the surface reticulated, and somewhat wrinkled; the young ones subpilose, the older ones ferruginously hairy on the nerves, especially beneath. Peduncle terminal, hairy like the young branches, short, bearing in our specimen two small leaves and a dense head of numerous flowers; the great length and spread of the corollas giving the appearance of an umbel, or almost of a panicle, if the calyces be not inspected. The corollas are five inches long; cream-white, glanduloso-pubescent; the tube very slender, geniculated below the limb (where the stamens are inserted), and then broader; limb of five spreading, obovate, nearly equal segments; stamens and style very much exserted, the former curved upwards. Being also a native of Sierra Leone, it requires stove heat, and it has the merit of flowering while the plants are small; the head of flowers is near a foot in diameter. —*Bot. Mag.* 4355.

COMMELINACEÆ.—*Hexandria Monogynia.*

Dichorisandra ovata. This very superior perennial, herbaceous plant is a native of Brazil, but we are unacquainted with the particulars as to the exact locality in which it is found, or by whom originally introduced. It attains a height of from three to four feet, has large ovato-lanceolate leaves, which are smooth and shining, with parallel longitudinal veins, prominent on the under side, bright green above and purple beneath, and clasping the stem at the base. The flowers are borne on erect, terminal racemes: they are composed of three ovate, obtuse sepals, which form the calyx, and three obtuse, entire petals, larger than the sepals, intense blue; at the base rather paler. It requires the temperature of a stove, where, during the period of growth and flowering, abundance of both heat and moisture can be supplied; and where, at the season of repose, it can be accommodated with a rather cool temperature and a fair proportion of drought.—*Pax. Mag. Bot.*

LOBELIACEÆ.—*Pentandria Monogynia.*

Lobelia fulgens. Vars. *multiflora.* Stem reddish-purple, rising to the height of four feet; leaves deep green, tinged on the under side with purple; flowers, double the size of those of the species, of a brilliant scarlet. *Pyramidalis.* Flowers double the size of those of the species; colour paler, and of a brighter scarlet; segments of the corolla longer, narrower, and more acuminated than those of *multiflora.* *Marryattæ.* Stem rising two or three feet high; flowers deep crimson-purple, mottled with pale rose-colour. —*Pax. Mag. Bot.*

ORCHIDACEÆ.—*Gynandria Monandria.*

Barkeria Skinneri, var. *major.* This fine variety is larger and stronger than its species in every respect; the flower-scape is nearly two feet long, holding upwards of thirty flowers, of a deep reddish-lilac purple, with stripes of bright gold colour down the lip. In habit it is much stronger, the foliage longer, and double the breadth, apparently less delicate than the species, and in every way superior. It requires, in common with other South American orchids, the humid atmosphere and temperature of the orchid-house, but does not flourish if subjected to a very close and strong heat; about 70° is sufficient during even the time of its most vigorous growth, and it should also be hung in some part of the house where it can daily receive a little air; in its intermediate or flowering season, a lower temperature should be given, and, during the time of its torpidity, should be kept quite cool and dry. It will not grow if potted in rough peat, whatever attention may be bestowed. The best way is, to plant it in an open formed rough wooden, or other basket, filled with sphagnum and pot-sherds, which should be hung from the roof of the house; it also grows freely if fastened to a naked block of wood.—*Pax. Mag. Bot.*

SPRING MANAGEMENT OF PELARGONIUMS.

Whoever attempts the culture of Pelargoniums, will speedily find the necessity of very strict attention from the period of re-potting in February till the blossoms are set; there is scarcely another family of popular flowers requiring such unremitting care, and on which the several, apparently trifling, manipulations present such real effects. Immediately after the plants are transferred from the small pots they have stood in through the winter, to those in which it is intended they shall bloom in, it will be necessary to keep them rather warmer than usual; the check consequent on the removal has to be recovered, and until new roots are emitted and the development of fresh foliage resumed, the house must be kept at a higher temperature, not so much by fire heat as by the exclusion of the external air; a close and rather humid atmosphere, by preventing evaporation through the leaves, allows the plants time to regain their vigour, and the functions of their several organs go on again in unison one with another. As the first great step towards correcting an error is the conviction of its existence, it may not be amiss to point out a very general mistake made at this stage of the plant's progress, and its results; if air be admitted in any quantity, or the application of fire indulged in, the atmosphere of the erection is proportionately dried, to counterbalance which a drain upon the juices of the plants begins, and continues so long as the injudicious treatment is persisted in; and as for several weeks they are dependent entirely upon previous secretions, their roots being displaced or ruptured in the process of repotting, it follows that whatever moisture is then withdrawn, must tend to weaken present strength and prolong their anticipated starting. To remedy this enervation, water applied to the soil is worse than useless; it cannot be taken up, in consequence of the previously named condition of the roots, and remains in the earth souring and chilling it, thus further retarding the re-establishment of the plants. Let the opposite course be adopted, and a quick resumption of progress will take place, and by the time the roots have fairly entered the new soil, a great advance will be observable; then we may again allow them plenty of air, increasing the quantity as we get further into the season. As soon as a perfect recovery from shifting is established, and new shoots are developed with vigour, the course of training and stopping must commence; each branch must be tied out, so that it and all others may have an equal share of light, at the same time a circular outline may be given to the entire number; at the first stopping, the vigour of the several branches must be taken into account: were they all reduced at the same time and in equal proportion, the strongest would still maintain their advantage; but as the object is to equalize the vigour of the plant, the leading shoots should be stopped (by taking out the terminal bud) a week or so before the smaller ones; and by reducing them but slightly, several eyes or buds may be expected to start on each, and thus by dividing the excessive strength on that particular part, it is brought down to the average; while the weaker portions, having the chance to draw more sap in consequence of being left longer, and afterwards stopped to a single bud, will in all probability throw out a branch at least equal in strength to the other multiplied portions.

During the emission of these new branches, the plants must be frequently turned round on the stage, that each side may be equally presented to the light, and when all have grown three or four joints, the second stopping should be done; as it is not likely the season will permit a repetition of this course, we have now to look forward to its effects on the production of flowers, and that these may be produced together on all parts of the plant, the shoots must be gone over simultaneously, without regard to anything more than the shape of the plant; stop them all so that the next crop of branches may spring forth together and equally near the exterior, that the surface may present on all sides branches in the same stage of growth. While this is going on, there must be no lack of attention to the other parts of their management: Pelargoniums like a regular and moderate supply of moisture, nor must the temperature fluctuate much; a rap with the knuckles against the sides of the pots will with a little practice impart a pretty accurate idea of the state of the soil contained in them, and so of the quantity of water required; and the admission of air must be so regulated that the thermometer may range between 45° and 55°; this gives a mean of 50°, and the nigher it is kept to that point in the day the better, allowing it to fall a little at night. Insects are always troublesome, but as prevention is better than cure, the syringe should be frequently employed, and by ejecting the water with some force over and under the foliage, their first settlement is often disturbed; to permit the accumulation of dust or other filth upon any part of the plants, soil, or pots, indicates such inattention as to be altogether incompatible with the idea of cultivating these flowers, that I shall dismiss it without further remark; but in case of any decided attack of green fly, fumigation must be immediately resorted to, and repeated nightly till every vestige is removed; do this when the plants are dry, and always give them the second dose, which few will withstand.

We come now to a question on which many strong opinions have been lately expressed, namely, the tying of the flower-stems. As a grower, I am decidedly of opinion some support is necessary, to give the neat finished appearance so truly desirable; the "uncontrolled elegance of nature" is a poetic allusion, sounding extremely pleasing, I allow; but it is still questionable if its stanchest advocates would admire the *careless* freedom they commend, were it brought into practice, and when plants have to be moved from one place to another it is absolutely indispensable, or the utter destruction of beauty must result. Besides, we view the plants in an artificial condition altogether; then why object to an artistic completion of what was begun and carried on by art? At the same time I am not entering on a defence of the "forest of sticks," which it is admitted has often been resorted to, to draw an ugly specimen into shape; the plants may be grown so as to require no support or straining in themselves, but their flowers must be held erect in such a manner that one may not injure another when moved; and if properly done the foliage will conceal the means by which it is effected. J. W.

THE NEW FLOWERS OF THE SEASON.

Now that cultivators will be about to make their additions by purchase of the season's novelties, we may perhaps render some assistance by a brief review of the notes taken of such as were seen in the neighbourhood of the metropolis. The task of dispraising being so invidious, we shall leave out all we think inferior, and mention only such as appeared the best.

Dahlias. Oakley's Gem, unquestionably the "gem" of the season, is a fine-formed flower, with petals of good substance, smooth and well shaped; fills well in the centre without confusion; colour white, tinged but slightly with yellow, and edged evenly with bright lilac; is said to be very constant.

Collinson's Shylock, being a dark scarlet, will be very useful. It is a decided improvement on anything we have of the colour; the flower is large, showy, and well formed, leaving little to be desired, except a trifling alteration of the eye.

Stein's Richard Cobden. This, though somewhat common in colour, is much to be admired for its rich, smooth, well-arranged petals, and will be found a standard variety.

Keynes's Walter Hilton. A first-rate back-row flower, with a remarkable depth of petal, the only drawback being, as is usual with large flowers, a slight depression of the eye; colour buff, shaded with orange.

Gaines's Mont Blanc. White, but not pure; in every other respect first-rate.

Golden Fleece (Metrop. Union) is a most desirable colour, and, was it a little brighter, might be called amber. As regards other properties, it is at least of average quality.

Dahlias—Fancy Varieties. The great improvement visible in these is a striking instance of the success ever attendant on well-directed, persevering skill, and must offer much encouragement to the young florist; but few of those now brought forward are at all behind what, only a short time since, was considered perfection, with all the advantage of beautiful and brilliant contrasts in colour.

Turville's Fire King is conspicuous for its bright, orange-red, fiery-looking petals. The flower is of fine shape, and, being quite distinct, is desirable in every position.

Elphinstone's Mrs. Shaw Lefevre is equally good; the petals and outline excellent; colour red and white.

Barnes's Jenny Lind is good and extremely pretty, the bright, crimson-tipped petals being very striking.

Harrison's Jenny Deans is another pleasing flower; the ground-colour of a sanguine hue, edged with white; the petals well formed and smooth.

Turville's Charles Turner. Outline good; petals finely-formed, filling the centre evenly and well, not large; colour white, tinged with blush, and tipped with deep purple.

Bally's Maid of Kent. Very neat and delicate; tolerably good form; petals good, and plenty of them; white, tipped with rose.

Pelargoniums. Beck's Aurora's Beam. A large, well-formed flower; upper petals dark, edged with rose; lower petals deep rose; white centre; good habit, and fine truss.

Beck's Honora. Large, distinct flower; upper petals dark maroon, with a narrow edging of pale rose; lower ones almost white, suffused with a delicate blush.

Hoyle's Crusader. Large, bold flower; upper portion dark, veined, or almost streaked; lower petals light red; centre tinged with blue; fine truss; rather loose habit.

Hoyle's Superlative. A large and very fine flower; upper petals dark, purplish maroon, banded with a narrow, even edge of rose; lower ones a delicate, yet full pink; centre white; fine truss, and better habit than the preceding.

Topping's Brilliant. Large, flat, and even; upper petals fiery red, with dark blotch; lower portion reddish-scarlet; extra fine truss, and vigorous habit.

Miller's Grandis. A large and striking flower, but uneven and rather thin; upper petals dark maroon, edged with pink; lower ones bright, deep rose, with blotches of a deeper colour; centre white; large truss, and apparently a free bloomer.

Carnations. Ward's Sarah Payne. Pink and purple bizarre; quite a gem; guard petals very large and stout; good centre; white, very pure, and the colours distinct and bright.

Barrenger's Earl Spencer. Purple flake; a large, well-formed flower; ground pure, and the colour laid on bold and even.

May's Ariel is a good addition to the rose flakes. We could wish a little more purity in the white, but the form and marking are perfect.

Holliday's Lord Rancliffe is an excellent scarlet bizarre; guard petals fine; a slight confusion in the centre; white, pure, and marking regular.

Picotees. Edmonds's Jenny Lind. A light, red-edged flower, first-rate in every respect; will be indispensable, and must be procured as soon as it can be had.

Barrenger's King John very closely resembles Headly's King James. The edging of both is a shade or two darker and broader than that of Barraud's Cornelius, hitherto the best heavy, red-edged Picotee we had.

Burrough's Lorina. A light-edged purple; is a neat, but rather small flower, of about average quality.

May's Juliet. Another light purple; is superior, though slightly inclined to cup; it has a beautiful, regular edge, of bright purple.

Pansies. Only a few really good varieties made their appearance last season, among them were Bragg's Mrs. Bragg, a fine, large, smooth, flat flower, with yellow ground, and a broad belt of dark maroon. Turner's Achilles is a tolerably good flower, with yellow ground, fine eye, and purple crimson belt. Thomson's Cossack and Turner's Potentate may be reckoned among the useful dark selfs.

Fuchsias and *Verbenas* made no advance, if the latter is not retrograding; of the former, only Smith's Ne Plus Ultra and Turville's Beauty of Chelmsford can be mentioned: the first like *Formosa elegans*, but of improved habit, and the other resembling One-in-the-Ring. Of Verbenas positively nothing can be said.

CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS—MARCH.

Fruit Garden. This is a busy month in the orchard, and no time should be lost, but grafting should be begun as soon as the sap runs free enough to allow the bark to be easily raised from the wood. In selecting stocks for apples and pears, use the crab and wild or seedling pears for standards, and the paradise or quince for dwarf trees, or such as are intended for small gardens or to be root-pruned. The buds of all choice trees, whether against walls or in the open garden, should be judiciously and gradually thinned, so that the trees may have no more to do than to mature a proper crop of fine fruit and a sufficiency of wood for the following season, thus materially reducing the quantity of cutting at the winter pruning, and enabling the operator to train his tree to any required or necessary form. This operation should be done so gradually, as to allow of the blossoms to be thinned when fully expanded; and also the fruit, when set and past danger, even when stone-fruit are nearly half-grown.

Protect the early cherry and apricot blossoms from frost and cutting winds; also peach, nectarine, and other wall trees, but give all the air possible, and entirely remove the coverings when practicable, as too much protection in fine weather is very detrimental to the plants, by preventing a free circulation of air, and also by protecting many insect enemies, and enabling them to breed and spread about earlier than would otherwise be the case. Fig-trees should be gradually deprived of their winter covering, pruned, and nailed. If properly disbudded and regulated during the previous summer, the knife will hardly be wanted now—a great point gained, as the fig is very impatient of cutting.

Dress and fork over the strawberry plantations, being careful not to damage the pushing crowns. In order to secure a late crop, the flowers should be picked off of a proper quantity, to meet the demand. For still later crops, seed of the red and white Alpine varieties should be sown, either on a rich, warm border, or in pans or boxes, to be afterwards transplanted.

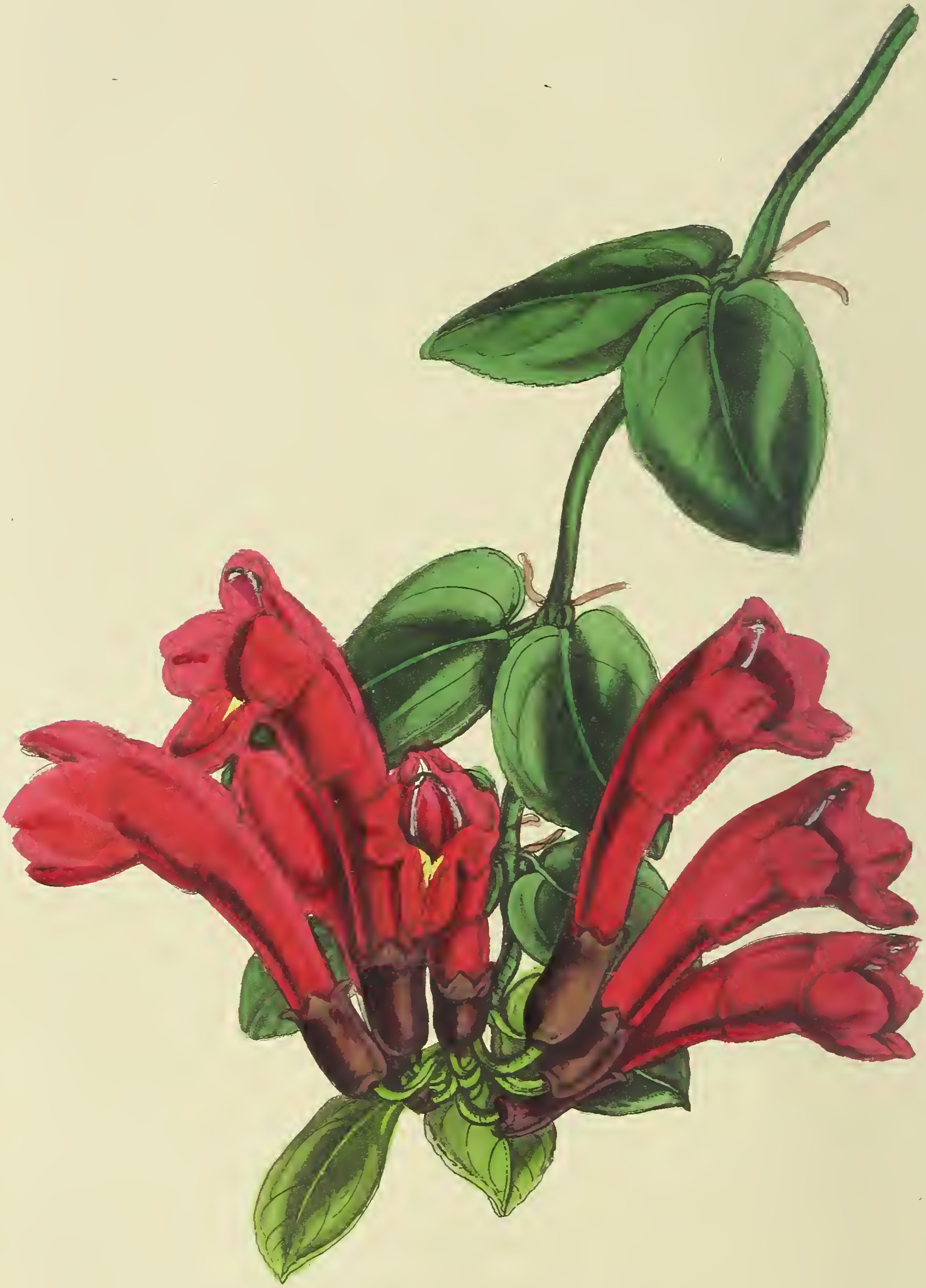
Forcing Garden. Allow the temperature to range a little higher in the cucumber pits as the sun gains power, but make little or no difference in the night heat, as the plants would only be drawn by raising it at that period. Stop the shoots freely, and do not allow them or the leaves to become crowded; thin the fruit so as not to injure the plants by allowing them to bear more than they can carry. Maintain a moist genial atmosphere, and use liquid manure occasionally, but not too freely. The same directions apply to melons, being still more careful in the application of moisture. Stop at, or a joint beyond, the fruit as soon as they are fairly set and swelling; and sow for late crops. Pineapples should get a general shift, and should be kept rather close for a time afterwards; such as are swelling off their fruit should be top-dressed with rich compost, or where this is not convenient, they should have regular supplies of liquid manure about once a week. The day temperature among these last may range to 85°, or a few degrees higher with sun heat. Advance the temperature very gradually in the peach-houses, and thin the shoots and fruit carefully, maintaining a very equable moisture about the roots, and a free circulation of air in the house, with a day temperature of about 75°; guard against red spider and green fly. Raise the heat in the early vinery as the berries swell, but do it gradually, and in the daytime; stop and thin the shoots as early as possible, also the berries, so that the strength of the plant may be directed entirely to advance the growth of the necessary crop and rods. Keep up a genial moisture, and syringe moderately morning and evening.

Allow the vines in the later house to break gradually, syringing freely, and raising the temperature gradually as they advance.

Clear away all misplaced or supernumerary buds or shoots as soon as possible, and destroy all insect enemies as soon as they appear. Allow the temperature to increase about the fruiting strawberries, using liquid manure rather freely, and keeping the leaves moderately thin by taking off the older ones. Succession crops in flower should have a temperature of about 60°, with plenty of air, a moderate supply of water at the roots, but none over the leaves or bloom. Stop the shoots of figs at about the fifth or sixth joint, and water freely, with liquid manure occasionally.

Maintain a regular temperature, not higher than 60°, in the mushroom house, and water any beds becoming too dry, using water a little above the heat of the house. Asparagus, Rhubarb, and Sea-kale may still be introduced to keep up the supply until the main crops are ready for use. Sow a succession of French beans, and supply the bearing crops with plenty of water both to root and top.

D. M.



ÆSCHYNANTHUS RADICANS

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ÆSCHYNANTHUS.

WITH AN ILLUSTRATION.

This very elegant genus of Indian parasites has of late occupied much attention at the hands of botanists and cultivators, consequent on the introduction of several exceedingly beautiful species; and, from the exertions of the latter, much of the obscurity which formerly attached to the management of such plants has been removed. A few years since Æschynanths were considered troublesome subjects, making little or no return for the care bestowed, and in not a few cases were rejected as completely worthless because of the paucity of flowers. A better knowledge of the physical geography of the countries whence they are derived, and a more careful attention to the habits of the plants, have brought about the results to be expected; and the production of an abundant display of blossoms is now as much a matter of certainty as before it was precarious. The Indian Archipelago, and particularly the Islands of Java and Borneo, appear to abound with these plants, where they flourish in company with, and in the same manner as the epiphytal orchids; dead and living trees on the margins of forests are clothed with them, and the ravines and gulleys of mountain streams, as they descend to the warmer temperature of the plains, are enlivened by the brilliancy of these and similar vegetable beings. It is not long since a common error prevailed, in the idea that air plants and others of resembling character were mainly inhabitants of the depths of the thickest forests, and hence arose the practice of providing a dense shade as essential to their culture; the more accurate accounts which modern collectors give of the habitats of the treasures they discover shows this to be wrong: the majority of the class are met with in positions perfectly open to the influence of the sun, and at certain seasons they are positively scorched up by its strength: now, though it may not be advisable to attempt this extremity, inasmuch as it would increase the difficulty of attaining its opposite—the great and continued supply of moisture which they receive in a state of nature, during the active or growing season—yet we may correctly infer that on this ripening process depends the production of flowers, and having thus traced our error of management to its origin, we may confidently pursue a different course, and, by permitting more sun-light, and consequently a drier atmosphere about them when near the completion of their growth, induce the condition favorable and necessary to the development of the floral organs.

To explain the detail of such a system as with existing appliances may most nearly assimilate to the natural condition of the plants, we will begin its history in the primary state of a cutting. All the species are of the easiest propagation; pieces of the young wood from three to five joints in length, taken off any time in spring or summer, strike with facility when potted in sandy peat, covered with a glass, and plunged into a brisk bottom heat; supposing this to be done in April or May, the cuttings will have emitted a sufficient number of roots to bear separation in about a fortnight or three weeks. Place each plant into a three-inch pot, having the bottom well drained, and the crocks covered with a layer of moss, and the remaining space filled with sandy peat intermixed with small pieces of rotten wood or charcoal; pot the plants rather high, that is, keep the base of the stems at least of the same elevation as the rim of the pot, give them a gentle watering, and return them to the bottom heat. During the succeeding summer a temperature of 75° for the mean, with abundant moisture, should be kept about them; the object being to grow them as fast as possible; and as occasion may present, the points of the shoots should be pinched out to render the plants bushy: as regards the application of moisture, it is not drenchings from the water-pot that is required, but presented more in the form of vapour; for it must be borne in mind these plants derive at least as much nourishment through their leaves as from the roots. The best means of supplying them in the requisite manner is to plunge the pots into a bark bed of the stove, and cover them with a hand-glass, or if this convenience is not at hand, place them in a hot-bed frame, and there cover them in the same way: this prevents evaporation, and by keeping a close humid atmosphere, renders a slight syringing once or twice a week sufficient. The use of slightly-warmed water, and the removal of moss or filth from the pots, need not be insisted on, as they will occur to every gardener. By continuing this treatment as far into the autumn as the state of the season may warrant, the plants will be enabled to grow considerably, and by the arrival of dull weather will have formed handsome dwarf, branching specimens: they are then to be kept dry and dormant till the following spring, which is best effected by placing them on a light warm shelf of the stove as near to the glass as possible; and with scarcely any water they will pass through the winter in safety.

The majority of the species, if left to their natural impulse, will bloom in autumn and winter; but as such fine objects are desirable at all times, and would be very effective for exhibition, it may be well to recommence their growth at different times: those it is desired to bloom in summer should be started in January, but March will be soon enough for those which are to flower at a later period. As they have stood in small pots hitherto, it will be necessary to shift them; but about a fortnight before this is done, plunge the pots in heat again, and water moderately, so as to cause the roots to push a little previously. In repotting, avoid a large shift; they are not benefited by it for the reason before assigned, in the plants deriving nourishment through the leaves; and in mixing the compost, regard must be had to their native habits,—fibrous peat used rather rough, with rotten wood, moss, and charcoal, form the best mixture, to which sand may be added if absent in the peat. Thoroughly drain the pots as before described, and elevate the base of the plants rather above the top of the pot. For three or four months succeeding this operation they must be grown as fast as a mean temperature of 70° and plenty of moisture will allow, through the first half of which time the branches may twice or thrice be stopped, which will increase their number and that also of the flowers. Arrived in May, the earlier plants having shoots from six inches to a foot in length, must be allowed gradually to cease their activity by withholding water, and exposing them freely to the air, and, when quite done growing, set them on a sunny shelf in the stove, give very little water, and no more shade than will suffice to preserve the foliage uninjured; persevere in the course till the flowers are well set over the plant, which may be expected in the course of a month, and then they may receive a rather more liberal supply of water to bring out the blossom vigorously; and when their beauty is past, let them sink again into a dormancy which should last through the winter.

The later plants will require similar treatment, and the absence of sun-light to ripen the last must be compensated for by an entire withholding of water. It will be found in the second and subsequent years of the plant's progress, that some support is required for the branches of such as are potted: to our taste, the neatest mode is to train them on a cylinder made of copper wire; those usually employed of iron wire are objectionable, because the humidity to which they are subject speedily rots the paint, and the metal corrodes, to the great injury of every part of the plant coming in contact with it. Some of the smallest species, as *Boschianus*, *radicans*, and *Horsfieldii*, may be grown in baskets, and have a graceful appearance when their branches hang equally all round: indeed the whole will succeed in this way, or attached to blocks of wood, having moss tied round their roots and suspended from the roof; they are thus seen in the most natural manner, but from the rapidity with which some of the larger kinds grow, an objectionable looseness becomes apparent, to remedy which it is necessary to cut back large plants, and thus fine specimens are not attainable. As a verdant covering for the walls of stoves and orchid houses, they are very desirable; though in such a position we must not expect so abundant a display of blossoms, because the amount of moisture received is not easily regulated: their appearance scrambling over rockwork in such erections is also very pleasing, and imparts the best idea of their beauty in a wild state.

The following is a summary of the genus as at present known, taking them in chronological order, the first recorded introduction occurred in 1837 from Khoseea, when

Æ. ramosissimus was made known to us. This appears to be identical with what is called in gardens and the Bot. Reg. *maculatus*: the stem and branches are marked with lurid blotches; leaves oblong acute, from two to three inches in length; flowers yellow and dull scarlet, about two inches long, seldom more than four or five together; plant very much branched.

Æ. grandiflorus, syn. *parasiticus*, Wallich; *Incarvillia para-*

sitica, Roxburgh, appeared shortly afterwards, and is represented to be widely spread in the East Indies; it resembles the preceding except that it has a stronger habit, rather larger leaves, and larger flowers of a brighter scarlet and orange, which are produced eight or ten, or more together.

Æ. Roxburghii was made known to us at the same time and from the same source as the last; it is a smaller plant, with deep orange-coloured blossoms, which hitherto have been but rarely seen.

Æ. Horsfieldii, from Java in 1843, resembles the last, but has more rotund foliage.

Æ. Boschianus, also a native of Java, whence it came in 1844; it is a smaller plant, with nearly cordate leaves; flowers about an inch and a half long, having a wide tube, which with the limb is rich reddish-scarlet, the large calyx is coloured with a deep red purple. A free summer-flowering species.

Æ. Lobbianus, of stronger habit than the last, leaves more acute; flowers considerably larger, tube and limb bright orange-scarlet, calyx deep purple; from Java, the date of its introduction being 1845. It also is an abundant bloomer from June to August.

Æ. pulcher. This plant differs from the preceding in having larger leaves, a smaller, green, and glabrous calyx, and a longer tube, which, with the exterior of the limb, is rich vivid scarlet, the interior of both is pale yellow. Introduced from Java along with the last.

Æ. miniatus. This species approaches more nearly the *Æ. Boschianus*, but has a short, dish-shaped calyx, and deep vermilion-coloured flowers, with a blotch of bright yellow in the throat; a most abundant bloomer. Also from Java.

Æ. speciosus. A strong-growing species, with large bright green foliage, and flowers between three and four inches long, produced in fascicles of ten to twenty together; the lower part of the tube orange, the upper part and exterior of the limb scarlet; round the margin of each lobe of the limb is a black line, which divides the scarlet from the orange colour of the interior. A free summer-flowering species, from Java.

Æ. longiflorus. This species resembles the last, except that it has puce-coloured flowers. It is an abundant bloomer, but produces its flowers in autumn and winter.

Æ. radicans. The subject of our present illustration is also a Java plant; it and the preceding five were thence obtained by Messrs. Veitch, of Exeter, through their very successful collector, Mr. Thomas Lobb.

THE PANSEY.

This flower may be regarded as the stepping-stone to floricultural eminence, as in its cultivation the embryo florist usually expresses his earliest attachment to the pursuit, and receives the first lesson in an art which unfolds greater sources of intellectual pleasure the further we extend our researches. An idea has become rather prevalent, that the Pansey or Heartsease requires little or no management, in fact, is beneath the attention of any who would really deserve the credit attached to their productions;—an hypothesis altogether without foundation, as the attempt to produce only a dozen perfect blooms will prove to all, on the first trial; and it is the unexpected rising of difficulties where all was presupposed to be mere matter of course, that I imagine has caused the withdrawal of such cultivators as only felt a lukewarm interest in the matter. There must be unremitting attention, and no small measure of practical tact, to ensure success; for though of the freest disposition to grow in genial weather, and ever ready to bloom, the plants are subject to injury from a variety of causes in winter, and the finest sorts have an inherent and unconquerable inclination to degenerate, to prevent or correct which forms the sum of their management. The method I adopt is as follows:

Beginning with the season at the present date: let healthy young plants be procured, of the autumn-striking if possible, as spring plants are scarcely strong enough to be depended on till next month: let them be planted out in beds composed, as nearly as possible, of thoroughly rotted turfy loam, and about a third the quantity of old hot-bed manure and sharp sand—if the former is reduced nearly to a state of earth, it will be the better; by no means employing manure of any kind in a fresh state. The situation should be an open one, completely clear of trees, and the more sun it receives, the better for the welfare of the plants; a square foot is about the space each individual should be allowed, for if intended for exhibition, or the production of really fine flowers, they must not be left to form large tufts, but a successional bed of strong young specimens will be required to come into bloom through each month of the season. When the first plantation has begun to grow, and lateral shoots, of an inch and a half or two inches in length, can be obtained, about half the number formed should be taken off for propagating, leaving the others to assist in the progress of the plant and the development of the succeeding shoots, for though an over-luxuriance is to be prevented, we must not fall into the opposite error, and, by cutting too much, induce a stinted condition; these cuttings strike root readily beneath a hand-glass, covering a bed of sandy earth in a warm position; and here I may remark that, as a rule, it is always better to carry on the striking process in a sunny spot than in the shade, for it is easy to ward off the fiercest rays of the sun, and the warmth imparted through the subduing medium of a piece of mat or bunting is most beneficial to the cuttings, accelerating the production of roots, and helping them forward so much as to make nearly a fortnight's difference in their progress.

While this part of the management is going forward, the bedded plants will be coming into bloom, and unless the soil has been prepared to the full as rich as recommended, the assistance of manure water, applied liberally twice a week, may be necessary, especially if the weather prove dry; and as the time so taken up will probably bring us to near the end of May, when the power of the sun begins to be excessive to such fragile objects, we must provide shades for the protection of the flowers; various are the designs in which these are made: the majority, however, cover the flower too effectually, and thus injure the growth of the stem which bears it; this must be avoided, and as the simplest form is usually the best, I would recommend a piece of wood half an inch thick, from fifteen to eighteen inches long, and half that number in width; this fitted with a leg ten inches long, driven securely into a hole in the middle of the board, and at right angles with it, will effectually intercept sun-light without excluding air ; one end of the board is to be placed on the ground on the sunny side of the plant, and the leg being thrust a little into the ground will bring the upper edge of the board completely over the flower, and thus guard it also from wet. A dozen such shades may be made by any one in half an hour, and they have the advantage of being inexpensive, and when painted look neat, and last a long time. Blooms having crumpled petals or irregular in colour, should be removed as tending only to weaken the plants unnecessarily ; and as guard to the roots, slices of potatoes or turnips should be buried in the earth as a trap for wire-worms — frequent examination will prove their efficacy in this respect ; and slugs, caterpillars, or other creeping things must be constantly sought for and destroyed. Propagation must be so regulated, that a sufficient number of plants may always be in hand to form a new bed in each month, which will produce the most perfect flowers in the succeeding one ; and as the chief point is to get blooms from young specimens, it is not advisable to let any stand beyond two months or till such time as they have produced one crop of flowers, and the cuttings necessary to the succession. Following this course through the summer ensures a supply of good flowers at all times, in number of course proportionate to the amount of stock. In September, provision must be made for the winter store intended to bloom in April and May of the succeeding year : these are to be potted as soon as struck, putting each plant by itself into a sixty-sized pot filled with sandy loam. It is essential that the soil be as pure as possible, altogether free of manure, and made so porous by the addition of sand as to permit the immediate escape of superfluous water ; such earth, however, requires but little water in dull weather, and hence its principal recommendation, for panseys are very subject to injury from damp resting about the neck of the plant. Until the arrival of frost, they are better in the open air, but as soon as it occurs with any degree of severity, remove them to frames, where they are to stand through the remainder of the winter ; and while here they must be carefully guarded from all extremes : wet and cold are their greatest enemies, without we include too much nursing,—this is certainly not less dangerous than either of the others ; to avoid this error, admit all the air possible at all times when not freezing severely, tilting the lights behind in wet weather, and removing them altogether when it is fine. Water cautiously, and keep them clear of slugs, and there will remain but little doubt of their passing through the gloomy season unscathed. By the end of February or early in March, the strongest may be bedded out, reserving the smaller plants for a month or so, and then begins again the season's routine just described. Some cultivators depend on the last plantation of autumn for their first spring flowers, but such plants are by no means safe, a severe winter frequently destroys a great number; such as survive, however, generally produce a few good flowers early, and supply the best cuttings for the spring propagation.

As regards originating the pansey from seed, I would remark, it is not advisable to make more than two sowings in a season, one in March, and the other about the end of May: the first will bloom just before the beginning of the hot weather, and the latter in autumn. If the convenience of a hot-bed is at hand, the first sowing may be made in it and the plants pricked out while small, which will forward their blooming considerably. Seedlings will not bear removal after they have grown to a moderate size, and therefore to sow in autumn is only to incur the risk of losing the produce in winter, because they cannot be taken up for protection.

As soon as cuttings can be got from such as have promising qualities, strike them at once, and thus secure the kind; but it is entirely useless to attempt the removal of the parent plant: in cases where a good flower appears late in the season and has no lateral shoots, the best means of preserving it is to cover with a small glass in the worst weather, to take it up is to destroy it, and many really good varieties are thus lost. The only additional remark I need make relates to the choice of cuttings: avoid the terminal or main stem and those which are hollow, as is frequently the case in summer; such as these seldom succeed; the smaller pieces from near the base of the stem are most certain, and if placed under a shaded glass in a sunny situation, nine tenths will grow.

J. C. Brown.

THE GENUS CLERODENDRUM.

Never was a laudatory appellative better applied than that bestowed by the immortal Linnæus on this splendid genus, and well may the members of it claim to themselves the high title of "Glory-tree." There are nearly fifty species and varieties belonging thereto, the major part derived from the East Indies, others from South America, China, and a few from Australia; with us they are stove plants, requiring rather peculiar treatment on account of the marked character of the climates they are native to. The British cultivator when called upon to exhibit his skill, urged by the stimuli of honorable competition and reward at those meetings now so widely spread and so highly beneficial throughout the land, soon found the glory-tree well suited to his purpose, as presenting an aspect noble in exact proportion to the care given it, and thus evincing most accurately his own capacity for the distinction aimed at. Clerodendrums are now invariably seen at all summer and autumn meetings of the votaries of Flora, and their splendid appearance on such occasions has carried their culture into places where showing is not thought of; they are indeed essential to every establishment containing a stove, and well repay the trouble of careful management. As may be supposed, among an assemblage of plants so extensive as occurs in this genus, there are some less worthy of regard than others, those usually considered the best will be presently enumerated, and as the treatment of the individuals forming that section is identical, I shall proceed with it in general terms.

All the plants of this portion of the genus are of a half-shrubby nature, so vigorous as to form large handsome specimens in the growth of a single season, and from the tropical character of their native countries require an annual cessation from development, or a season of decided rest. The period at which their growth is made to commence must be regulated by that at which they are desired to bloom; early plants may be started in January, and successional specimens may be introduced to heat, onwards till April; the finest plants are obtained from cuttings struck in autumn, and that have made from six inches to a foot of wood previous to the winter; if such as these are reduced to about half their length, repotted, and plunged into a brisk bottom heat, they will speedily push forth three or four strong shoots, and in a little time grow rapidly. All but the lowermost of these shoots should be removed when about a couple of inches long, and may be struck to form a succession to the parent; the latter, being reduced to a single stem, will soon throw out some noble foliage, and must be shifted into a larger pot as fast as its roots are found to fill the preceding one; such as are started in four-inch pots, will, if progressing favorably, require to be repotted at least three times, and with these plants it is almost a rule that the more room is allowed their roots, the larger and finer will be the leaves and flowers. The surface temperature in which they are grown should average 65°, and the bottom heat must be kept as near 80° as possible: so situated, their progress will be rapid, and in about two months the flower stem will begin to rise, when the final repotting should take place, and in another month their splendour will begin to be apparent.

The soil in which they are found to grow best is a mixture of turfy loam and peat in equal quantities, rotten manure from an early hotbed of last year, or something like it, and silver sand, the two forming about a third of the whole compost; this thoroughly mixed and well drained will not fail to grow them fine. In shifting from one pot to another, the utmost care should be taken to preserve the points of the roots uninjured, and to render this as certain as possible, it is always best to repot before the fibres become at all matted round the outside of the ball; the object being to keep the plants in a constantly growing state, without check or hinderance of any kind, the consequences arising from an opposite course being a stinted condition of the plant, and a smaller panicle of flowers. Up till the time the plants are put into the blooming pots, clear water must be given them rather liberally, but not in excess, and occasional syringings will assist the foliage greatly; but once fairly settled and beginning to grow after the last shift, the ordinary waterings may be alternated with applications of liquid manure; this has a surprising effect on the flower-spike, which shoots up and branches with amazing vigour. Insects must, of course be suppressed; the most troublesome is the mealy bug, but they are easily removed with a sponge and water.

Propagation is by no means difficult, either from seed or cuttings: the former is freely produced, and requires only to be sown in spring upon a brisk heat; cuttings should be selected from the growing shoots when about three inches in length, taken off with a heel, or close to their union with the old wood, and set in a pot of sandy peat, covered with a bell-glass, and plunged in bottom heat, they strike in a period varying from a fortnight to a month, according to the season. As a means of securing the best description of plants for spring use, some of the earlier specimens should be cut back as soon as their beauty declines, and set in heat, which will induce them to grow again, and thus cuttings may be procured in August, when they strike with facility. The winter management of Clerodendrums may be briefly stated: it consists in keeping them quite dormant; they will not, however, bear any great reduction of heat, or there is great difficulty in starting them again; an out-of-the-way part of the stove, where they do not receive water, suits them best, or the young plants of autumn may be kept on a shelf and very sparingly supplied with moisture.

The following are those usually grown, and may be regarded as the best of the genus:

Kæmpferii. Very brilliant, crimson scarlet; large panicle.

Infortunatum. Crimson; vigorous habit, and large flowers.

Squamatum. Scarlet; less vigorous than the preceding; free flowerer.

Paniculatum. Scarlet; inferior to either of the others.

Splendens. Crimson; a vigorous climbing species; flowers in drooping, dense, short panicles.

Fragrans pleno. White; large, double flowers in a corymb very sweetly scented.

J. Butcher.

THE AURICULA.

A return of the seasons brings to the florist a renewal of pleasures, and in this month his first gratification is presented in the opening of the auricula bloom. We have had a remarkably favorable season, and for once the ordinary complaints may be fairly dispensed with, and those who are habitual grumblers may rest content with the comforting assurance that they are not likely to witness a better. It is a fact which repeated observation bears out, that Alpine vegetation in general, and the auricula in particular, grows with far more vigour in sunless weather, than when a clear, unbroken sky allows the rays of light to fall in their fullest intensity directly upon the plants;—this is precisely the character of the weather we have yet experienced, and though the season may not be so forward as usual, present appearances promise it will be a good one. Instead of the ordinary exciting sun by day and nipping frosts at night, which may be regarded as the distinguishing character of March, we have had a very even temperature, and an almost total absence of frost, with just the kind of moist atmosphere which is found to bring these plants steadily forward; the growth of healthy established stock is therefore exactly what is most desirable, the foliage large and deeply coloured, and the bloom-stems rising with strength, surmounted by "real cauliflowers," waiting only the influence of April, "smiling through her tears," to burst forth in all their resplendency.

A few practical hints in connexion with this bursting forth may be useful to the beginner. Many is the good truss I have seen spoiled by an over-anxious desire to get them out; indeed, it is just now that mischief is most readily done, and the real amateur,—he who delights in them as objects of natural beauty, and shows them as instances of his own skill,—he of all others is most likely to err, unless cool, calculating experience can be brought to his aid. In such a case, they are grown against time, and unless in full beauty on the appointed day, are comparatively devoid of interest, hence the desire to have them expand; but whatever the consequence of an obstinate refusal on the part of any particular variety to unfold its loveliness, it is positively useless to attempt forcing it open by any increase of temperature; the causes which operate beneficially on most other floral forms are here inert, or perhaps injurious, for it is by no means an uncommon result in the impatient adoption of some such measure, to "set" the pips, as it is called; they are then immoveable, never afterwards advancing an iota: any sudden change of temperature has this effect, and, whether arising from an increase or diminution of heat, is alike irremediable; consequently, all attempts at hastening or retarding till they are full blown, must be avoided as tending only to disappointment. The period at which the flowers are most susceptible of injury in this way, is when they begin to open, or are partially unfolded, and some kinds are more readily affected than others; Conqueror of Europe is amongst the worst, often progressing satisfactorily till three parts open, and then suddenly becoming fixed, the florets remaining in a cup-like form till they die; cautiously, then, must they be regarded onwards, till fully expanded, maintaining about them an equable temperature, by carefully covering them with mats at night, and a liberal admission of air on fine days, with partial shade in clear sunny weather. As regards their station, there is no place more fitting than beneath hand-lights, near the foot of an east wall, or if such a spot does not occur, let them stand completely open, the mid-day sun may be warded off, or its power reduced, as occasion may point out; but it is essential that they receive the vivifying effects of his first beams in the morning, and those of the evening may also be regarded as beneficial, though of less consequence.

To prevent accidents, it is well to have a small stick to each truss, tying it loosely; and to enable each pip to open fairly and flat, some soft wool or wadding should be so placed between them as to remove the larger from immediate contact with those less developed, and with a pair of ivory tweezers, all curled petals should be carefully opened and laid in their places; this will probably require looking to daily, and must be repeated on such as do not recline properly in their places.

Among the tricks in which some of our old florists delighted, was that of placing small leaden weights upon these "cockle pips," the effect of which may be readily supposed to be the death of the floret; but constant attention to their arrangement when opening, will usually prevent any disposition to curl, though much care is necessary in the manipulation, lest the paste be cracked, and thus, by avoiding Scylla, we fall into Charybdis. Very obstinate cases are better removed at once, for the blemish is sufficient to spoil the whole truss, and would be fatal to any stand; so, also, the supernumerary buds may be taken off as soon as they can be fairly ascertained; it is always best, however, to have a few extra flowers, if the strength of the plant will admit of their being retained, and when these are secured, all such as will not open while the truss is in its best state should be cut out. At the metropolitan shows, seven florets are required to constitute a truss, but the provincial growers only insist on five.

In case of hot, dry weather, just at the time the blooms are opening, or with backward plants, I have found great benefit arise from the employment of a pan of warm water placed beneath the pots in the evening when the glasses are closed; a soft, genial steam is thus created among them, which seems to assist the expansion of the petals very greatly.

FLORISTA.

DESCRIPTIVE LIST OF NEW PLANTS.

PRIMULACEÆ.—*Pentandria Monogynia.*

Primula Stuartii (Wallich). This beautiful perennial, herbaceous Primrose is a native of the mountainous parts of India, having been gathered at Gossain Thau, in Nepal, by Wallich, and on the Himalayah, at an elevation of 9000 feet, by Royle, who speaks of it as giving a rich yellow glow to those regions. It flowered in the garden of the Edinburgh Horticultural Society during the summer of 1847. It was received from India in 1845, by the late Sheriff Spiers, and was planted in a north, exposed border, in the summer of 1846, in a mixture of loam and peat. It stood the winter of 1846-7 unprotected, and without any artificial covering. It grows about sixteen inches high, and has leaves ten or eleven inches long, smooth, broadly lanceolate, acute, shining above, covered below with a yellowish, mealy matter or farina; the margins of the leaves are slightly undulated, with close, sharp serratures, which occasionally point downwards, and are somewhat revolute at the point.

The flowers are numerous, on a polyphyllous involucre; corolla yellow, salver-shaped, its tube twice as long as the calyx, narrow about the middle, and then expanding in a somewhat campanulate manner, near its union with the limb, where there is a marked contraction; limb of an orange tint towards the centre of the flower.—*Bot. Mag.* 4356.

PROTEACEÆ.—*Tetandria Monogynia.*

Orothamnus Zeyheri (Pappe). We have on several occasions had reason to lament the loss to our collections of many Cape *Proteaceæ*, which were once well known in our gardens. They seem to have died out, and have not been replaced; and we may now express our regret that the present superb species has not yet been introduced alive to our collections. That it will be so ere long we feel confident. The present faithful description was made from a living plant at the Cape, and kindly sent us by Dr. Pappe. It is a shrub, six to eight feet high, erect; the branches purplish, villous; leaves alternate on the branches, sessile, imbricated, entire, elliptic, externally concave, pellucido-punctate, glabrous, margined with purple, an inch, or an inch and a half long; capitula, one to three, or more, at the extremity of a branch, drooping, bracteated; leaves of the involucre distinct at the base, membranaceous, petaloid, rose-red; the exterior larger, oblong-obovate, obtuse, veined, glabrous within, externally and at the margin villous; bracteas similar to the leaves, imbricated, oblong-lanceolate, internally glabrous, glossy, externally and at the margins densely villous; laciniæ of the calyx villous, bearded at the points, a little shorter than the style, which is filiform and glabrous; stigma coloured, apriculate. The plant was discovered lately by Mr. Zeyher, in marshy places on the summit of Hottentots-Holland mountains; flowering in July.—*Bot. Mag.* 4357.

CACTACEÆ.—*Icosandria Monognyia.*

Mamillaria clava (Pfeiff). A very striking species of *Mamillaria*, remarkable for its columnar, rather clavate, form, its very prominent mamillæ and large, glossy, straw-coloured flowers. Our plant is a foot high, columnar, of a glaucous green colour, studded, as it were, on all sides, with large projecting and ascending mamillæ, of a pyramidal form, with bluntly-angled sides, densely downy, with white wool in the axils; the areolæ terminal or subterminal, woolly, and bearing besides from eight to eleven straight, spreading, long, rigid spines, of a pale brown colour, and a single longer and stronger central one. From the extremity of this plant the flowers appear, two or three, large, handsome, and showy; the base is occupied by green, imbricated scales, tipped with red, considered the calyx, and then gradually pass into the copious, spreading, straw-coloured, glossy, linear-oblong, or subspathulate petals, serrated and mucronated at the apex, of which the more exterior, however, are entire, and tinged with dull red. Stamens numerous, orange-colour; style rather longer, six-rayed, yellow.—*Bot. Mag.* 4358.

GESNERIACEÆ.—*Didynamia Angiospermia.*

Achimenes ocellata (Hooker). Roots of this beautiful new Achimenes were sent from the Isthmus of Panama by the Government collector and naturalist of H.M.S. Herald, Mr. Seemann; and they produced their bright, vermilion-red flowers, dotted on the limb with black spots, upon a pale yellow ground, in the winter of 1847-8, in the stove of the Royal Gardens. In the early spring, however, the blossoms were much more brilliant, of a deep vermilion, but with less of the white round the black dots; so that the name was less characteristic. It promises to be a great ornament to our collections, and will, in the summer, we cannot doubt, flourish best in a cool greenhouse. The stems rise from one to two feet high; they and the petioles are deep purple, as also is the under side of the handsome, full-green foliage. The flowers are produced at the axils of the leaves, near the top of the stem; the tube of the corolla is campanulate, about an inch long; the limb of five spreading, nearly equal, rounded segments, rather copiously marked with white spots, bearing black dots in the middle. The white of these spots, however, at a more advanced season, was almost obsolete.—*Bot. Mag.* 4359.

MALVACEÆ.—*Monadelphia Polyandria.*

Sida (*Abutilon*) *integerrima* (Hooker). An old inhabitant of the stove of the Royal Gardens, but of whose history nothing has been preserved. By specimens, however, in my herbarium, from Funcke and Linden, I learn that it is unquestionably a native of New Granada. Its nearest affinity is perhaps *Sida graveolens*, from which it is abundantly distinguished by its large size, perfectly entire leaves, different vestiture, differently formed calyx, much greater spread of (yellow) flowers, and by the well-defined, deep orange spots, quite confined to the base of the petals. It flowers in May, and is really one of the handsomest species of the genus.—*Bot. Mag.* 4360.

ARISTOLOCHIACEÆ.—*Gynandria Hexandria.*

Aristolochia anguicida (Jacquin). A singular and very little known species of Birthwort, native of New Granada. Jacquin discovered it at Carthagena. Our collector, Mr. Purdie, sent it to the Royal Gardens of Kew, where it first flowered in December, 1845. As the natives of North America employ the *A. serpentaria* (which, M. Bosc says, is one of the most active sudorifics known) for destroying serpents, and also for curing persons bitten by those reptiles, so the natives of South America (New Granada) employ this for similar purposes. "The juice of the root," according to Jaquin, "mixed with the saliva by mastication, renders powerless a serpent of moderate size, if one or two drops are put into the mouth of the creature, when it may be handled for several hours and put into the bosom with impunity; but after a time the animal recovers: a larger quantity, however, occasions its death." Jacquin attributes to the odour of the root the faculty of driving away serpents when they approach this plant; and he also relates that the juice, applied to the recent bite of a serpent, or taken internally, infallibly cures the patient. It has long, slender, twining stems, with distant, pointed, heart-shaped leaves, having a deep sinus at the base; the peduncles are axillary and solitary, bearing a single flower, in shape not much unlike our European *A. clematitis*, but in colour very different. The base of the perianth is inflated, globose, almost white; the rest of the tube is infundibuliform, narrow below, white, spotted and reticulated with brown; the mouth dilated, oblique; the lip deflexed, longer than the tube, from a broad base gradually tapering to a blunt point, dashed, and transversely streaked with rich brown.—*Bot. Mag.* 4361.

ORCHIDACEÆ.—*Gynandria Monogynia.*

Satyrium aureum (Thunberg). This fine species of Satyrium is a native of the Cape of Good Hope, whence it was introduced a few years ago by Messrs. Young, of Epsom, in whose nursery it first flowered in August, 1842. Its fine, rich orange flowers, and the ease with which the plant is grown, and the number of blooms produced, render it a very desirable species for cultivators of hardy and half-hardy Orchids. It succeeds well in a pot of rough peat-soil, but the pot should be half filled with a mixture of broken crocks, charcoal, and sandy loam. Supply plenty of moisture when in a state of growth; but keep it perfectly dry during the season of repose. It requires only the shelter of a frame or a cold pit, and thrives well if planted out in the frame, in a mixture of sandy loam and peat. It will also grow when planted about six inches deep in a warm border, and protected by some slight covering in frosty weather, but exposed whenever the weather is fine and mild. It is increased by dividing the tuberous roots.—*Pax. Mag. Bot.*

CULTURAL REMARKS ON AMARYLLIDS.

Such of your readers as possess a stove, and are fond of rearing seminal novelties, should grow a collection of these handsome bulbs. They are all beautiful, but if a selection may be made, I prefer the genus *Hippeastrum*, especially for the production of seedling varieties; for though the number of true species is limited, not exceeding twenty, and the hybrids and cross-bred kinds are perhaps more than two hundred, yet the whole of the group so readily intermix, that a great temptation still exists to try them further. So far as growing them to produce flowers is concerned, I fancy no class of plants to be of easier management: they need only to be grown strong to ensure fine blossoms; this they will do most satisfactorily under the following treatment: in spring, that is, between February and May, according to the time they are desired to bloom, repot the plants and set them growing: for one or two years it may be necessary to do this without regard to their blooming, in order to induce a habit of flowering at the required time. The soil for them should be a mixture of equal parts loam, silver sand, and rotten manure; this may be regarded as the staple for the majority of the order, though a few of the more delicate kinds succeed best when a portion of peat is added, or substituted for the manure. In potting, drain well, and give plenty of root-room: they are too often cramped in this repect, and hence, from the short supply of food, a puny growth results. An ordinary-sized bulb should have a twenty-four-sized pot, and the larger ones will fill a sixteen; carefully preserve all the live roots, and remove such as are withered and dead; distribute them equally through the soil, and press the latter pretty firmly in its place.

On their first introduction to heat, the roots should be placed at the coolest end of the stove, that some little activity may arise before they are placed in bottom-heat, and up to this time give but little water. The appearance of the leaves at the crown of the bulb, must be the signal for real growing measures, plunge them at once in a bed having a bottom temperature of about 80°, or if of greater warmth, place the pots but half their depth in it; water will be required daily in liberal supplies, and by keeping the plants near to the glass, and admitting air freely on favorable occasions, they will grow with vigour and increase in size greatly.

This is to be regarded as the preliminaty treatment of young bulbs that are not in a blooming condition, when they have attained sufficient strength to flower, a little difference will be necessary in their spring management; but to pursue the course of those we started with. They will have completed their growth by August, and should then be allowed to sink gradually into a state of dormancy, so that, by the approach of winter they may be quite dry, and are to be thus kept until the succeeding active season. I find the best place to keep them through the winter, is on a dry shelf in the greenhouse, and if it has but little light they are less likely to be excited before their proper time. On the return of spring, the strong bulbs will push up their flower stems even before they are taken to the stove, and then begins again the growing treatment; the difference to be observed with those which are deemed of sufficient strength to flower, is to keep them dry after they are taken into heat, and defer the repotting till the stem rises.

As regards the selection of kinds with a view to the production of distinct varieties, there is some difficulty to start upon new ground; it is certain, however, we must have some that have been before employed, on account of their inclination to bear seed, and for the well-known sportive character of their offspring; from among such I would recommend *Colvillii,* itself an hybrid between *Reticulata* and *Johnsonii,* the red variety of *Formosum* called *Rubicundum,* a cross breed of the former and *Reginum.*

Sanguineum offers a promising parent both by reason of its clear beautiful colours, and the comparatively rare genealogy of a cross between *Rutilo* and *Vittata ;* the last named, though extensively grown, I would reject altogether from seed-bearing: it is coarse in colour, and has been employed so much that we cannot hope for any new feature to distinguish its seedlings. *Goweri,* an hybrid of *Striatifolia* and *Acuminatum,* is remarkable for its singular reddish-purple flewers, and on this account may be desirable. *Bellum* also having three colours, red, white, and purple, may be regarded as promising, it was obtained from *Sweeti,* impregnated with *Carnarvoni :* for the same reason, *quadricolor,* a variety between *Griffini* and *Aulicum,* is to be recommended; it is scarlet, green, purple, and white.

Of the true species, perhaps the best selection may be made from such as *Breviflorum, Ambiguum, Equestris, Solandriflorum, Bulbosum,* and *Reginum ;* these, with the exception of the last, have been but little tried, they are perhaps less beautiful in themselves than some other, but possess more marked characters than are to be elsewhere found.

Some other genera belonging to the order are also well worth attention, were it only for their present beautiful forms, particularly *Zephyranthus, Habranthus,* and *Crinum.* Nor should the very lovely *Griffinia* be overlooked, for was it possible (which indeed it may be) to impart the cerulean hues of its species among any of the members of the families previously named, a very great triumph would be achieved. *G. hyacinthina* is, I think, one of the loveliest winter ornaments of the stove we possess. Whatever portion of the order may be grown, the course of treatment I have laid down may be taken as the key to the management of all derived from a similar latitude; nor do any of them differ in a greater respect than the amount of temperature, which of course must be determined by the country whence they are derived. The secret of flowering them well, is to grow them with luxuriance, and afterwards allowing them to become perfectly dormant.

FREDERICK VINCENT.

Ham Common.

LITERARY NOTICE.

The Rose Garden. Part XI. Mr. Paul continues to invest his subject with an interest at least equal to that which marked the commencement. In the part before us are some good remarks on the selection of varieties for the particular styles of growing the rose tree denominated standard, half-standard, dwarf, pillar, and weeping roses, showing the suitability of the several classes to one or other of these forms, which are neatly illustrated by engravings. Practical information of sound character follows, on renovating old or debilitated specimens, summer pruning, as inducing the production of flowers late in autumn, and the protection of the tender kinds from the severities of winter. Chapter XI introduces the reader to all the mysteries of propagation, the manipulation of cuttings and buds occupying the remainder of the first portion of the number, the entire preparation and subsequent management of which is given in so plain and understandable a manner, that the merest tyro by following the directions may count on success. The descriptive list continues in the same accurate and concise style, affording to the purchaser exactly the information required to form judicious selections.

CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS—APRIL.

Fruit Garden. All grafting should be finished as early in the month as possible, as to defer it later is in general attended with very little success. The early grafts should be occasionally looked over, and care taken that the clay round them does not become displaced or cracked; also, towards the end of the month, all buds or suckers below the grafts should be removed as early as possible, that they may not divert the sap from the graft, and thus render its union with the stock imperfect or impossible. Continue to gradually thin the wood and flower-buds of wall and other choice trees, especially young ones, so that they may not be burdened with too great a crop, and also that they may assume the requisite shape; the displacing of buds at this time also reduces the number of unsightly wounds caused by the use of the knife, as well as materially lessening the amount of gum or canker on stone fruit trees.

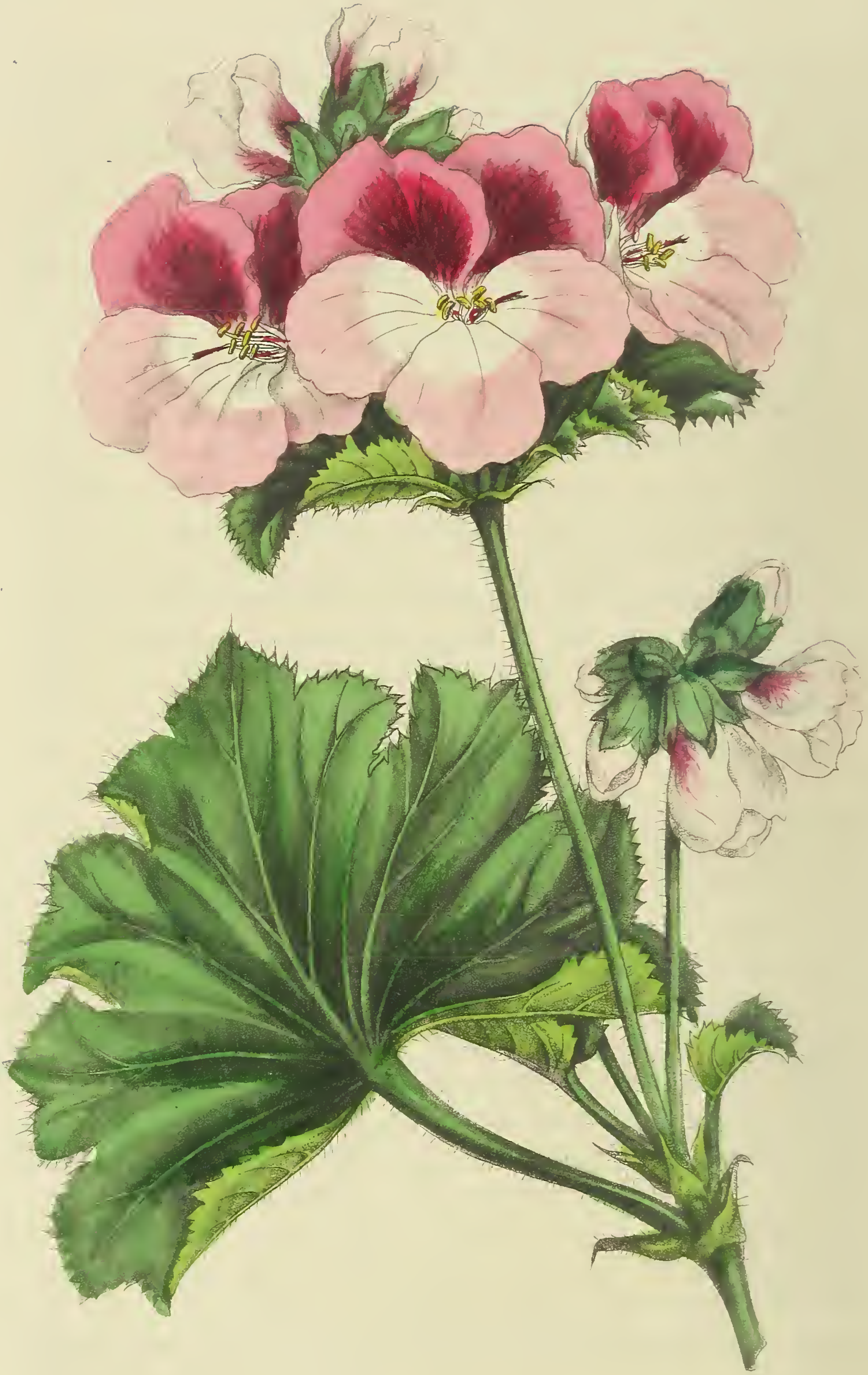
Continue to protect trees in bloom as long as necessary, but remove every sort of covering as early as possible, and let the trees have the full benefit of mild rains. Keep the mulching about trees lately transplanted, and water, if the weather should prove dry enough for the plants to require it. Treat figs as last month, nailing in the shoots thin, so as to admit a free circulation among them, and also to lay in a proper supply during the summer. Pay constant attention to insects of all descriptions, especially to caterpillars on young apple-trees, from which they should be carefully removed by hand-picking, as the only infallible plan of getting rid of them; dusting the plants with lime, soot, and various other substances has been tried with various degrees of success, but these insects are generally so thickly protected either by the webs they spin, or by their position, usually on the under side of the leaves, that these applications are in general very partial, even when they are useful. The gooseberry caterpillar is another very troublesome enemy, and the first appearance of them should be carefully noted, and immediate preventive measures adopted. White hellebore powder dusted over the bushes has been used with the most beneficial results, and as it can be used when the caterpillars are small it should be applied early; if any escape and grow to a large size, then hand-picking may be resorted to, in addition to another dressing, but they must be got rid of, or the bushes are most materially injured for the next year, as well as the present. The green fly, especially on wall trees, should also be checked as soon as noticed, both to prevent its ravages on the young leaves, and the increase of its numbers, which is enormously rapid on the first rise of temperature.

Vines upon walls should be pruned and nailed early in the month, before the sap flows freely; mulberries against walls should also have their shoots thinned and regulated so as to allow the air to get amongst them. Where fine and early crops of strawberries are wanted, the runners should be removed as soon as they appear, but advantage should be taken to preserve a sufficient number on a piece set aside on purpose to supply a proper quantity of strong and early runners for forcing.

Forcing Garden. The temperature in the cucumber pits should continue to range higher as the sun gains power, but the night-heat should not be increased in the same proportion, or the result will be a weak straggling growth and indifferent fruit. Continue to stop, thin, and regulate the plants as they advance, and otherwise attend to previous directions. Treat melons in a similar manner, but with care in the use of moisture, which should be more sparingly applied, especially over head; when so applied of an afternoon, close the pits early; shade in hot, bright weather. Put out succession crops of both cucumbers and melons. Maintain a brisk heat among the growing pine-apples, so as to use both air and water freely as soon as the weather becomes bright and clear; the young plants should be shifted as often as they fill their pots, shading them until they begin to push again. The swelling fruit should be kept rather drier, and when they begin to colour should have little or no water. Peaches and nectarines should be freely syringed in the morning with clear water, and the roots also regularly watered. Destroy green fly and red spider as soon as they appear. Continue to thin the fruit and branches as necessary, and maintain a temperature of about 75° or a little higher by day, giving plenty of air. The heat in the early vinery may rise to 80° in sunny weather, and air may be admitted freely. Continue to thin and regulate the fruit and rods, allowing neither to become crowded. Vines in pots should be shifted as they advance, and kept near the light, being occasionally supplied with liquid manure. Thin the trusses of strawberries of all weak flowers or fruit, and water more sparingly as the fruit ripens. Introduce succession crops to the coolest part of the house and water freely.

Make additional sowings of French beans, and syringe the forward crops freely, using liquid manure to the roots about once or twice a week. Keep the temperature regular in the mushroom house, and remove all sea-kale, rhubarb, and other roots as they cease bearing.

D. M.



Alfred Adlar

QUEEN ADELAIDE

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FANCY PELARGONIUMS.

WITH AN ENGRAVING OF IVERY'S QUEEN ADELAIDE.

The above is a term applied by consent to a race of these charming flowers, which is now enjoying a considerable share of attention in the floral world; it is distinguished from the ordinary or pencilled varieties by several characteristics, the most prominent of which is the dwarfer branching habit, and consequent increase of flower-stems, bearing individually smaller blossoms, but so numerous in the truss as to fully compensate for the deficiency in size. Those who apply their observation with any degree of interest to the progress of horticulture, cannot have failed, after a few seasons' attention, to remark the changes or fashions which arise, quite as exclusive for the period as those which emanate from the *beau monde*, and sometimes, it must be confessed, scarcely less capricious in effect; by the aid of factitious circumstances, occasionally a complete furor is excited, and, for a time, certain classes of flowers appear to receive the united care of the entire flower-growing population; certain savans are always found to take an active part in this direction of the public taste, as they are pleased to term it, and the thorough exclusion of aught but the fashionable flower is a too frequent result.

Perhaps no tribe of plants offers a more striking example of the effects of such a system than that under consideration; the several phases of attention and neglect are forcibly presented in one or other of its sections; and to show both advantages and defects, we need no other evidence than the present condition of the genus. Some years ago, when geraniums were introduced to us as species, collections were formed at no matter what cost, and preparations appeared making for a very extended course of culture in their natural forms; the effects of hybridizing, however, became known, and the productions of Sweet, Davy, Dennis, Moore, and others, caused so complete a revulsion in the public taste, that scarcely an individual escaped the contagion; species were spurned, and seminal varieties became all in all; and this continued with increasing strength till within the last two years, when the first intimation of a change began to be dimly apparent; it was hinted that either perfection was reached, or, what in effect is even more forcible, that further endeavours would be more profitably made in some new direction; last season the determination was more plainly expressed, and now we believe the leaders of the most fashionable gardening reunions are divided in nearly equal force between a return to the culture of species, with the presumption of obtaining a new strain of hybrids, or the adoption of the particular section represented by our plate. An unlooked-for and rather important difficulty has arisen in the way of the first suggestion; it is found that a very considerable portion of the true species have become extinct in our gardens, and are not reproducible otherwise than by sending collectors for them; this places the best of the genus beyond the reach of any but the very wealthy for several years to come, and in the mean time those who determine for their culture must content themselves with the existing deficient list. The limited number of species now remaining is, however, a matter of less regret than the loss of practical acquaintance with their management; both resulting from the turn of public favour towards the seedling offspring, which, though productive of the present race of truly splendid flowers universally decorating our greenhouses, is still to be deplored for its ultimate exclusiveness. By pursuing with such undeviating earnestness the particular line marked out at the beginning, we have succeeded in obtaining a race so distinct, that its parentage can scarcely be traced, and so beautiful as to excite the admiration of all; at the same time we have lost much of the knowledge by which so great a work was effected, and which in our new efforts would have been found most useful. The triumph is accompanied by the regret that we have been so devoted in the pursuit as to lose the thread that should lead us back to the starting-point. A history of the combinations made in the earlier days of Pelargonium-growing and their results would be most interesting, now that it is seriously contemplated to begin anew with the same tribe, as, in the absence of authentic information of the kind, it is not only possible but probable that for a time the utmost of our success will be the reproduction of varieties differing scarcely at all from the old ones that have lain neglected for years and been deemed worthless; we repeat, this is likely to occur, because what were the readiest combinations at the commencement are still among the easiest, and, in the absence of any guard against such negative progress, will inevitably take up much time and attention, till some master mind or fortunate chance point out a new road to the desired end. On the adoption of the other section, however, but little difficulty is to be apprehended, as by following the principles which have led to such admirable results in their allies, the pencilled varieties, we are certain to effect improvement; at present the race is very limited, and those which exist have not much diversity of colouring; abundant space is therefore afforded for the introduction of novelties, and that they may be real improvements, we have only to select from the kinds we possess such as have the most compact, neat habit, to combine with others remarkable for their purity and depth of colour. To make the class popular, we must endeavour to render it pleasing, making the distinction in habit as widely different as possible from the more ordinary kinds, and endowing it with colours the most vivid we can select; without a degree of popularity, this or any other pursuit loses its charms, but once ensured, we may go on improving till form and order be as particularly insisted on in these as in their rivals, whose position it is desired they should occupy. Some standard, though only an ideal one, must be fixed, towards which future results may approximate, and were we asked to point out one by which new varieties may be estimated, we should say, let them approach as nearly as possible in habit to the beautiful little variegated kind, known as the "Dandy;" as much more robust as can be attained with regard to the desired dwarfing, and clothed with flowers of the most decided and brilliant tints. The variety just named does not flower, or at least we do not remember to have seen its blossoms, and, therefore, but little assistance will be derived from it; that, however, does not lessen its value as a standard for habit: the object being to attain something perfectly distinct from the usual character of the tribe, we know none that may be instanced as combining more symmetrical elegance with a contour so decidedly unique. The importance of a completely separated habit in the class being conceded, we must also strenuously endeavour to impart colours that are not known or usual in the pencilled varieties; the scarlet kinds do not readily mix with others, which, though the brilliancy of their flowers is unsurpassed, is the less to be regretted, as the introduction of the rampant vigour which distinguishes them would be fatal to the compact style it is desirable that the new race should be remarkable for; a very beautiful tint, quite novel among dwarf varieties, will be found available in an old climbing kind, known as "Rollison's Unique," or "Crimson Climber," which, were its rambling subscandent character suppressed, would be one of the most beautiful we possess; another old and nearly-forgotten variety, called "La Belle d'Afrique," promises much towards the production of dark plum-coloured seedlings; these, with such as Daveyanum, Burnettianum, Goweri, Gurneyanum, and the newer kinds, Lady Flora Hastings, Queen Victoria, Jenny Lind, Anais, and the beautiful Queen Adelaide represented in our plate, will constitute the working-stock of those who begin at the present stage of the fancy.

We have hitherto spoken only of seminal varieties, which promise to be useful in the production of new members of the class, but it is quite probable that assistance may be derived from a portion of the species, and thus, by combining the advantages which the patrons of that section promise to themselves, with those already existing as before described, some unexpected and perhaps startling novelty may result. Botanists have separated the genus Pelargonium into several genera, as Ciconium, Campylia, Otidia, Phymatanthus, Jenkinsonia, and others, which arrangement is of undoubted assistance to systematists, but tending rather to mislead the cultivator, for nearly all these so-called genera will mingle and produce hybrids one with another, so that to define the limits of either correctly, when the cross-breeds are taken into the account, is most difficult; for our present purpose, however, it may be sufficient to say that Phymatanthus and Campylia combine most readily with the true Pelargonium, and therefore any of their species may be made the subjects of the first experiments; but though these are recommended, it must not be understood to infer the exclusion of any others, for in the present state of uncertainty which attaches to the subject, we must depend mainly upon actual experiment to determine what may or may not be accomplished, and so when a promising feature is apparent in any member of the group, we would advise the attempt to infuse it with another equally desirable trait. It is certain, that to meet and maintain the taste for flowers of this class, some new and beautiful forms are required, to secure which, for want of a guide, we may have to traverse much ground that has already been gone over; but this time, let us take good heed of the route, and especially avoid any overweening exclusiveness to this or that particular section, till some really deserving object arises that shall do as much for horticulture as the now declining Pelargoniums have effected; the fancy class seems calculated to fill the present void with the least trouble or loss of time, and if it only preserves a flagging interest till other and more definite changes can be worked out, it will be no inconsiderable service. Florists here have a task that a few years since would have overwhelmed them, now, however, they desire only to know what is required of them, and with a slight intimation of the means to accomplish it, they set about the work with a determination which admits only of success, and sooner or later we may reckon on such additions to the tribe as will completely resuscitate the drooping energies of its friends, and restore the fancy to its pristine vigour.

The variety which graces our pages on the present occasion is named in respectful compliment to the Queen Dowager, who is a liberal patroness of the Royal South London Floricultural Society, at one of whose meetings, we believe, the interesting ceremony of naming took place. It is in the possession of Mr. Ivery, nurseryman, of Peckham, whose zeal and success in the production of really useful novelties have gained for him a deservedly high reputation. Our plate shows but a small part of the plant, but sufficient, we hope, to convey an accurate idea of its beauty. The specimen from which the drawing was taken was about a foot in height, and two feet in diameter, completely covered on all sides by the clusters of its delicately-tinted blossoms; and these, be it remembered, are not the ephemeral ornament of merely a few days, but, as is the case with all well-bred members of the class, continue in beauty for a considerable period.

We have employed the term "Fancy" to designate the section to which it belongs, not because we admire such a name, or think it at all expressive, but because it is commonly applied, and therefore, for the present, best understood. "Fancy Pelargoniums" should, we think, intend those which have received so much attention for a long period, the larger-growing, pencilled-flowered, showing kinds; and for the comparatively new and dwarfer group now spoken of, we want a new appellation, which should express something of the peculiar neatness and copious style of blooming that distinguishes them. Will some of our intelligent correspondents invent a name, suitable and euphonious, that will convey some idea of the plants, and by association as much of poetry as may warrantably be admitted to every-day nomenclature?

THE ORANGE.

As it may not be uninteresting to many of your readers, I give you my mode of cultivating the above tribe. I will commence with their propagation, which is done in many ways, by seed and cuttings, by eyes, grafting, and inarching; the seed may be sown any time between January and April, in soil consisting of equal portions of loam, leaf-mould, with a little silver sand or road grit, and placed in a moderate hotbed frame, or pit. When up and about two inches in length, they may be potted singly into sixty-sized pots, and replaced in the hotbed frame or pit until they have made their second shoot, keeping them shaded from the mid-day sun: they may be then gradually hardened so as to be placed in the conservatory or greenhouse with the more established plants; after their second season's growth they will be fit for grafting or inarching upon, and any of our esteemed varieties it may be wished to increase are thus propagated. Cuttings may be taken from the parent plants about the middle or latter end of February, made in the usual way, and placed in wide-mouthed pots or pans, well drained with potsherds or charcoal, filling the pots with soil as mentioned above, with a layer of white sand over the surface; then place them in a hot-bed frame, and when well rooted, the young plants are to be treated the same as seedlings. The eyes may be made at the same time as cuttings, and formed in a similar way to the eye of a grape vine, leaving a leaf attached to each; place them in well drained pots or pans in soil as mentioned before, and treat them the same as recommended for cuttings. Grafting or inarching is performed the latter end of February or the beginning of March; the stocks which are used for this purpose, are generally raised from seeds, or cuttings, or eyes, but mostly from seeds. When the young stocks are grafted, it is the most certain way to place them into moist heat until they have firmly united, then hardening them so as to be placed in the conservatory. Inarching may be done about the same time, but does not require the same increase of temperature; after they have firmly united, the scion may be partially cut away, the remaining part to be finished in about a fortnight afterwards. About the latter end of February is the best time to go over the established trees to cut back any unsightly shoots, so as to cause the tree to have an uniform round head, and the middle of March is a good time to shift those trees which require it, or else it must be deferred until they have made their first shoot, which will depend upon the house having been kept close and warm. As I prefer a little fire applied to the house from February to May, I frequently syringe the trees, and likewise keep the house moderately moist and warm while they are growing, which is easily done if they are cultivated in a house by themselves. The soil I prefer for established trees consists of good turfy loam, or the top of a pasture field laid by in a heap for twelve months, to let the turf get well decomposed, some leaf-mould, with a moderate portion of road grit, also a little well-rotted cowdung, at least twelve months old, or more; let it be well mixed together in the month of January, turning now and then to admit the frost and air well into it. The pots, tubs, or boxes must be well drained with broken potsherds, charcoal, and bones, so that no water may get stagnate about their roots, giving them a good soaking of water at their roots frequently while growing, and occasionally with liquid manure to vigorous-growing trees, but not to those in an unhealthy state; when a large tree by chance happens to get into an unhealthy state, or loses its roots, which is mostly the case with unhealthy trees, it is the best way to head them in closely, wash the old sour soil from what few roots remain, then to repot them into as small pots as they can be well got in, and use soil consisting of rather a poor sandy loam, with a portion of silver sand and road grit; then let them be plunged into a moderate bottom-heat, where such can be had, or, if no bottom-heat is at hand, let them be kept quite close and moist, shading from the mid-day sun, which I strongly recommend for established trees, as it prevents the foliage from burning or turning yellow. Many cultivators prefer turning their orange and citron trees in the open air in summer, but the consequence of it is, the foliage, in nine cases out of ten, turns yellow, and looks unsightly for some considerable time; but where it is our employer's wish to have their orange trees turned out in summer, always choose a shady sheltered situation, if possible, as it keeps the foliage green and healthy. Hoping I have not trespassed too much on your valuable pages, I am, &c.,

G. STANLEY.

CHRYSANTHEMUMS.

THOSE who care to have fine Chrysanthemums in the autumn, are busy with their propagation through May and June. The earliest flowering specimens should be struck about the middle of the present month, and if a long succession is required, it will be well to secure two other lots at intervals of a fortnight in the striking. The cuttings I prefer are those formed of the strongest leading shoots, taking about six joints of the top to form each cutting; these should be struck as quickly as possible, in order to preserve their foliage. The best mode, I think, is to dibble them under a hand-glass, on a warm border, where the warmth of the sun assists them greatly, taking the precaution to shade them till rooted. Perhaps the principal point in the culture of Chrysanthemums, to form really fine specimens, is to keep them liberally supplied with fresh soil, or, in other words, to repot them as often as the roots are seen coming through the bottom. Mine are taken from the hand-glass as soon as they are well-rooted, and placed in small "forty-eight" pots. The soil used throughout is a mixture of loam and decayed hotbed manure, in equal parts, and about a third of the mass of sharp sand. The first pots are usually sufficient for them through the following month or six weeks, and then they are placed in others a size larger, the best plants getting another shift about the end of September. During the whole of this time they stand at the foot of a north wall, protected from rough winds and the heaviest rains, but open to all other weather. I am careful to give them plenty of room, keeping a clear space round each plant, that they may not suffer for want of air, which I believe to be a prolific source of evil, occasioning loss of foliage, and encouraging the spread of insects. At each shifting the points of the shoots are pinched back, to induce other branches, and, by a little care in placing sticks and tying, they are trained into handsome round specimens, that only require plenty of water to preserve the leaves to the bottom of the plant. For general purposes eight-inch pots are large enough, though a few of the best, if required to stand singly, may be put into larger ones, and those intended to bloom early should not be stopped later than the middle of September. Plants from cuttings, treated in this way, I find generally make the best-formed specimens, though a few very dwarf ones may be had by laying the points of some strong shoots into small pots about the beginning of September. These occupy about three weeks in making roots, and may then be separated, and treated the same as the larger plants. The whole should be taken into the greenhouse in the first week of October.

M. FAIRLOVE.

CLERODENDRON MACROPHYLLUM.

SOME time since, having occasion to travel in the west of England, I was led by an instinctive love of plants to spend a day at Exeter, that great centre, from whence has, of late, emanated so many of the choicest of our floral treasures. Calling at Veitch's, I was shown without hesitation through their now truly magnificent collection, and the greatest rarities were pointed out with an urbanity that might be profitably imitated in some of our metropolitan establishments. Here I revelled in the midst of proved and untried novelties, till my attention was arrested by the splendid new species of Clerodendron, with the name of which I have headed this paper.

All the frequenters of floral meetings are alive to the splendour of the Glory Tree (an admirable name for the genus), as it is usually seen with its immense panicles of brilliant scarlet flowers. No tribe of plants can be more effective, and the only desire that could be formed with reference to them is an increase of equally beautiful subjects—others of different colour, retaining the same noble aspect, was all that could be wished, and here that wish is gratified. *C. macrophyllum* may justly claim to rank with the best species of the genus for its distinguished character, even with the gorgeous *C. Kempfæri.* It is of erect habit, with leaves that surpass all others of the family in enduring richness. They are about a foot and a half long, proportionably wide, glossy, thick, and leathery. The flowers are of the purest white, produced by thousands on a large, partially drooping, branched panicle, some idea of which may be formed by imagining a gigantic feather surmounting a branch of Magnolia. No comparison exists between it and any other white-flowering species known to us; and I have no doubt that, as soon as it can be multiplied sufficiently, we shall find it universally adopted as a showing plant.

It was received from Java, where Mr. Lobb, the very fortunate collector for Messrs. Veitch, says it grows on sandy places, in an elevated district, known as the Seribu mountains.

Another remarkable plant was present, in the form of a Fuchsia, a species not named, with flowers somewhat like those of *F. fulgens,* but larger, a shade or two darker, and destitute of a corolla; the foliage smaller, and rather rugose. Its manner of growing was particularly remarkable: in the centre of the plant an erect, stout stem threw out several tiers of branches, proceeding in an exactly horizontal position, in alternate pairs, and growing gradually smaller as they approached the top; the outline of the plant was precisely that of a cone, and from the extremity of each branch hung the clusters of pendent flowers, which, seen thus symmetrically arranged, had a most pleasing effect; and this, I was told, was a constant habit of the plant, independent of any training. It looked like a pyramid of flowers.

J. R.

SHADING.

THE season is close at hand when the application of shades, to intercept and mollify the fierce rays of the summer's sun, becomes one of the most important operations in horticulture; every gardener knows how necessary it is to shield his cuttings and tender-growing plants from the mid-day intensity of this light; the majority of cultivated vegetation grows perceptibly more when shaded in a judicious manner, and without some intervention of the kind it is impossible to preserve certain tribes at all. Orchids cannot be grown in the face of a hot sun, their leaves blister, scorch, and die. Flowers too of all kinds are robbed of their beauty, and rendered short-lived by its effects; an enervation seems to seize upon all, even to the natives of exposed situations in the torrid zone, and they wait, drooping and breathless as it were, for the reduction of this power.

It may be worth while to inquire why plants of all kinds, whether indigenous or exotic, should be thus affected, and to make the matter more perplexing, it is remarkable that exotics, derived from countries where the power of the sun is represented as greatly exceeding what we experience, should suffer considerably more than do the plants of our own land; it is also to be observed that it is not the increase of temperature consequent on the presence of the sun which causes the prostration of their faculties, for many of those which suffer most may be grown for months together in a far greater heat with evident advantage; indeed the tenderest cuttings seem to derive a benefit from the heat diffused around them when the *direct* ray is warded off. Those who excel in the culture of hard-wooded plants are fully alive to the advantage of some screen for their choicest specimens, and the practice of erecting awnings for them and for the florist's more evanescent rarities is now common; was it that injury resulted from excess of heat, such contrivances would only prove an aggravation of the evil, for in the open air the average temperature beneath an awning will be found greater than in places open to the influence of cooling breezes. If then it is not the heat which causes mischief, what other power does the sun possess? Let us inquire of that profoundly astonishing and eminently useful science—chemistry. Light, as it is commonly known, such as pervades our horizon in the daytime, is composed of three colours, called the primitive rays, they are yellow, red, and blue; these completely blended form white, and by their union we enjoy a colourless or white medium, through which objects are clearly visible in their own peculiar tones; each of these prismatic tints, however, possess separate and distinct actions, which are manifested upon vegetation more quickly than upon the animal frame, because of the predisposing union of those tints which form the colour distinguishing that portion of creation; the yellow ray conveys light alone, the red is the burning ray, and the blue is distinguished by chemical action: acting in the most beneficial proportion, the last may be regarded as the life-giving principle which the other two nurture and mature; but their proportions vary, and thus it is that at certain seasons the predominance of one or other, causes the several phases in the existence of vegetation known as the growth and ripening of the wood; the red ray is most powerful in summer because transmitted to us through a clearer medium than at other times, and our exotic flora just awakened from the dormancy of winter, has not yet had time to develope its accessions, because of the shortness or inert character of our seasons, as compared with those of its native climes, and being thus prematurely subject to the ripening principle, suffers in proportion to its intensity. The idea of separating or condensing one or other of these rays to suit the exigencies of different classes of plants in their several stages towards maturity has for some time engaged the attention of scientific cultivators, and the possibility of the thing being established by their researches, it has become only necessary to determine how much of either will be most beneficial, or rather what combination will be required for furthering the object in view. For plants still in a growing state, the exclusion of the red ray seems to be most necessary, as it is to its influence that scorching may be plainly traced; but then we have the period of maturity to provide for, and without securing that to the fullest degree, it is well known all previous labour is void and waste; to provide a permanent medium through which the plants should only receive such a light as is most conducive to growth, would be leaving the work but half done, and for this reason we object to the use of coloured glass, which it has been lately attempted to reintroduce: a much easier and cheaper mode, applicable to existing erections, without incurring the necessity of alterations of any kind, and which we fancy to possess a great advantage, inasmuch as it will not interfere with the ripening process, may be provided in the blind; the union of the two rays most conducive to the development of vegetation, the yellow and the blue, will it is known form a green, varying in density according to the preponderance of one or the other, and as it is necessary to admit as much light as possible to prevent etiolation, we would advise in the combination of the colours to allow the yellow to predominate, thus forming a pale green; of this colour we would have the shades dyed, and thus the agency of the growing principles would be secured, while the occasional removal of the blind in the active season would check any undue development; and when maturity is desired, to take away the shade and admit the natural sun-light appears all that is necessary to bring the red or ripening ray in contact with the recent parts, which are then in a state to receive its influence with benefit. The effect of a common blind is beneficial in so far as it breaks the force of the heat ray, but then it reduces each of the others in the same proportion, and thus its advantages are but of a negative character; the space beneath such a shade is at the best but darkened, an effect by no means desirable among growing plants, and we have been practically cognizant of instances of scorching under blinds of a pure white colour.

The superiority of one possessing the advantages we have described must be evident, and the agreeable softened light it emits, in which the tints of flowers are heightened in a surprising manner, must be seen to be duly appreciated; blinds of the kind, to be all that can be desired, must be thin and rather loose in texture, strong, and the dye must be lasting, or a shabby appearance will annoy before the end of the season.

FROGS.

I AM tempted to address a few words to your readers on behalf of those highly useful, but pitilessly persecuted, creatures, the poor frogs. At this time of year they are met with in all damp places, and, to judge from the extraordinary antipathy exhibited towards them, one might be led to imagine that nothing more loathsome could exist; but let us remember nothing is created in vain, and before we join in or encourage any act offensive to the meanest animated form, inquire if we are justified in depriving it of that life we have no power to return. The dreadful maiming and torture such things are often subject to is altogether unjustifiable; creatures of the inferior scale to which these belong, are either injurious, and therefore to be destroyed in the most humane manner at hand, or they are beneficial, and consequently man's own interest should lead him to protect them. What is the case with frogs, and I may also include toads, for they are nearly identical in habits? who ever knew them commit a blameful act? where can it be pointed out and proved they have done harm? So little is the natural history of cold-blooded creatures studied, that there are many who believe these in particular to be among the most dreaded. It is said frogs, and especially toads, are venomous, that they destroy vegetation, and I have heard them accused of eating fruit, strawberries being particularly alluded to. All these notions are equally erroneous; no single instance can be authenticated in which injury has resulted from this much-feared venom: on the contrary, they are handled, aye, and even fondled with impunity by those who know their habits; and as regards their devouring either vegetables or fruit, without entering on an analytic description of their formation, I may say it is impossible; when they are found in strawberry beds, it is not the fruit they are seeking but the slugs, which do eat it; toads and frogs both live entirely on other smaller cold-blooded things, such as slugs, worms, and beetles, and are in their turn preyed on by those of a larger size, as snakes, &c.

A little quiet observation of these creatures on a fine dewy morning, when worms are abundant on the surface, will do more to convince the sceptic than all that can be written. I would therefore urge all who have an interest in the matter, to satisfy themselves in this way, and they will speedily come to the conclusion that frogs and toads are among the garden's best friends.

J. T.

[In confirmation of the above, and to prove frogs have a higher claim to regard than is generally accorded them, we may add, for a considerable period we had three confined in a stove, where they soon became domesticated as it were, would come when called, and take food from the hand; their movements when in pursuit of prey were astonishingly quick, and we have known even a butterfly captured; the tongue of the frog, and toad also, is an extraordinary organ; it appears to be folded in the mouth, the point lying beneath the base, and when the creature is about to seize its food, this is thrust out and withdrawn with inconceivable force and rapidity, dragging with it whatever it is directed against; they will pick up and devour things of all sizes, from a minute beetle to a worm six inches long. In frames and pits, or in fact all parts of a garden, they are most useful being actively engaged through the greater part of the season in search of the most destroying insects and grubs we are troubled with; naturally they are dormant in winter, but in the temperature of the stove they were equally lively, and continued to eat as they did in summer.]

FLORICULTURAL HINTS.

Tulips are this season very forward, strong, and promising; considerable anxiety will be felt through the next week or two lest injury occur from strong winds before they can be got well opened; the awning should be got over them, but kept drawn up as long as the season will permit; it is well to have it at hand in case of boisterous weather, but, I repeat, don't use it if at all possible to do without; the stems "draw" so quickly now, that to be closely shut up for a few days will inevitably render them so weak as to require sticks before the blossoms are thoroughly expanded; this is a dreadful disfigurement to any bed. A broad strip of netting should be kept constantly round the bed, especially in suburban districts; for fancy what would result from the very probable occurrence of a couple of cats pursuing their amours among the rising stems. As the blooms open, a constant "look-out for squalls" must be kept; for the fortnight that they are in perfection it is advisable to close the canvas permanently on the windward side, and roll up or down the other parts as may be required, to keep off sun, wind, and rain. When cutting blooms for showing, select if possible, such as are properly blown, but have not yet begun to shed the pollen; in travelling, the latter shakes out and causes much trouble to remove ere the flowers can be staged. While the bed is in its best state, go carefully over, and mark any alteration that may seem desirable, noting the correctness and quality of each flower, and if additions are necessary, do the same by the outside beds, that only roots of a fine strain may be admitted in next year's planting. Visit your neighbours, and endeavour to promote the friendly interest that should prevail among the admirers of the flower.

Pinks. The rising stems must be frequently examined, and the old trees regulated, making fresh ones as may be requisite; disbudding must be completed, and the pods of the earliest flowers secured from splitting; a top-dressing of sheep's manure, or the frequent application of manure-water, will greatly assist the swelling buds; wipe off green flies with a soft brush, or if in pots, cover them up, and fumigate with tobacco.

Carnations and Picotees with me are nearly as forward as the pinks, the stems have been twice, and, in some instances, thrice, tied, and I am busy disbudding; should they go on uninterruptedly, the shows will be all behind this season. Green flies and the frog-hopper or split-fly are very troublesome, for which I find no better remedy than an old shaving-brush. Top-dressing and liquid manure may now be indulged in.

Dahlias should be got out as quickly as possible, sheltering the recently-moved plants in sunshine, and at night by whelming a pot over them till the plants get too high to be so covered. Place the principal stick to each plant before the roots have spread far, lest they receive injury when at a later date it is thrust into the ground. The best place for the reception of these plants is an open piece of ground, quite clear of trees, but sheltered from the sweeping winds of the west, and if it is naturally of an open loamy texture, it will not require much preparation; otherwise, it will be necessary to dig in a good coat of cowdung upon light land, and hotbed manure and road-scrapings if inclined to be clayey.

FLORISTA.

DESCRIPTIVE LIST OF NEW PLANTS.

ACANTHACEÆ.—*Didynamia Angiospermia.*

Goldfussia isophylla (NEES). A species in many respects allied to the well-known *G. anisosphylla*, but at once distinguished, as the name implies, by the pairs of leaves being alike; whereas in the last-mentioned species there is a singular disparity, for while one of each pair is larger and broader than any of *G. isophylla*, the other and opposite one is reduced to a subulate scale. The flowers here, too, though rather smaller, are more copious, and the plant being more bushy, its numerous blue flowers render it a most desirable inmate of a stove during winter, the season of blossoming. It is a native of the East Indies, and was introduced by Dr. Wallich.—*Bot. Mag.* 4363.

PASSIFLORIACEÆ.—*Polyandria Pentagynia.*

Smeathmannia pubescens (BROWN). At Tab. 4194, we represented the rare *Smeathmannia lævigata*, and now we have the satisfaction of publishing the equally scarce *S. pubescens*, a native of the same country, viz. Sierra Leone, and imported by the same nobleman, Lord Derby, through the same medium, Mr. Whitfield. It flowered, probably for the first time in Europe, in the stove in the Royal Gardens of Kew, in February 1848. It is a more showy species than *S. lævigata*, having larger leaves and larger blossoms, the latter equally destitute of fragrance; they are borne singly on a short axillary peduncle, the perianth is of ten pieces or sepals, in two rows, the outer of which might be considered the calyx, but that they gradually pass into petals, the exterior sepal green, three-ribbed, and hairy, the rest gradually more petaloid, the inner white, all of them acute and spreading.—*Bot. Mag.* 4364.

MALVACEÆ.—*Monadelphia Polyandria.*

Lopimia malacophylla (MARTIUS). Sent from New Grenada by Mr. Purdie, to the Royal Gardens of Kew, where it flowers freely during the winter and spring months, and is far from being unornamental. It is a shrub from three to five feet high in our stove, with rounded, downy, herbaceous branches, and rather ample caudate, acute leaves, also downy on both sides; the flowers are produced on axillary peduncles, solitary, or two or three together; they are of five, long, cuneato-spathulate, oblique petals, rose-red, streaked with white in their lower half; the limb patent.—*Bot. Mag.* 4365.

ACANTHACEÆ.—*Didynamia Angiospermia.*

Strobilanthes lactatus (HOOKER). Received from the nursery of Mr. Low, of Clapton, under the name of *Ruellia grandis*, which seems to be nowhere published, and by no means characteristic of the plant. It is in all probability a native of the East Indies, and has the merit of enlivening the stove with its pretty pale purplish-white blossoms during the dead months of winter. Its flowers individually a good deal resemble those of *S. Sabinianus;* but the inflorescence is totally different, and the leaves are prettily variegated with white down the centre, looking as if milk had been accidentally spilled upon them.—*Bot. Mag.* 4366.

ASCLEPIADACEÆ.—*Pentandria Digynia.*

Oxypetalum solanoides (HOOKER). A pretty greenhouse plant, native of Rio de la Plata and South Brazil, with much the habit of *O. cæruleum;* but the flowers are not quite so large, nor are they of that bright tint which gives the charm to that favorite shrub. The present species produces its dull purplish-red blossoms during the summer months.—*Bot. Mag.* 4367.

ARISTOLOCHIACEÆ.—*Gynandria Hexandria.*

Aristolochia grandiflora. This plant has been previously described in *Bot. Reg.* 1842-60, under the name of *A. gigas.* Sir W. J. Hooker, in *Bot. Mag.* 4368-69, restores the specific term *grandiflora,* originally adopted by Swartz and Sprengel. At the same time other synonymes are mentioned, as *A. cordifolia* of Mutis, and *A. scandens*, Brown. It is described as a native of Jamaica, and not uncommon in the West Indian islands generally; it is also found in the northern parts of the continent of South America, in Guatemala and Brazil.

LABIATÆ.—*Diandria Monogynia.*

Salvia oppositiflora (RUIZ and PAVON). This very beautiful species of sage is a native of Peru, whence it was introduced a short time ago by Messrs. Veitch and Son, Exeter. Their collector found it growing in elevated and exposed situations at Tarma, where it was subjected to little moisture and considerable aridity. It is a stove shrub, with erect, pubescent branches, and rather small, ovate-oblong leaves; the flowers are borne on simple, elongated racemes, they are brilliant orange-red, and the whole plant emits a pleasant fragrance. It should be grown in a rich light loam, or a mixture of loam and peat.—*Pax. Mag. Bot.*

RHODORACEÆ.—*Decandria Monogynia.*

Rhododendron Standishii. An hybrid betwixt *R. maximum* and *R. alta-clerense,* obtained by Mr. John Standish, of Bagshot; the flowers are rather larger than those of *R. ponticum,* but are disposed in trusses of a very superior size. The habit of the plant is dwarf and spreading, and the leaves are of a deep glossy green. The violet crimson of the flowers is very rich, and the throat and upper divisions of the corolla are freely spotted with black. It is perfectly hardy, having been out in the open ground ever since it was a seedling, and has never been injured by frost. —*Pax. Mag. Bot.*

ORCHIDACEÆ.—*Gynandria Monandria.*

Cattleya bulbosa. Although *C. bulbosa* is of slender growth, forming a plant in every respect of small size, and is certainly inferior to some other species, yet it cannot by any means be considered an inferior member of the genus. The flowers, although not more than one fourth the size, possess much of the brilliancy, colour, and delicacy of *C. labiata.* It is supposed to be a native of Brazil; but by whom, and at what period, introduced is uncertain. It flowered during June, 1847, in the splendid collection of Mr. Rucker. This species, like all other Cattleyas, is easily cultivated, provided it be not subjected during the growing season to too much heat and moisture, and over-watering during the period of torpidity. Indeed it requires very little water, even during its most vigorous growth, and always suffers if exposed to syringing.—*Pax. Mag. Bot.*

GARDEN MECHANICS.

An ingenious friend has lately shown us an instrument for cleansing pots, which deserves notice, as being much handier than a common scrubbing-brush. It is simply a bundle of split canes, cut to about eight inches long, the outer portion being divided into small threads, and the middle left somewhat larger. It is bound tightly round with fine wire, and performs the work quickly and effectively. The advantage gained is, that the pot is scrubbed in every part of the interior at the same time, instead of only in one particular place.

He has also fixed upon the lower cross-piece of the handle of the garden-roller a brush made of whalebone, running the entire length, and so arranged as to sweep the cylinder in its revolutions, which completely removes the possibility of sticking and clogging, when drawn over wet walks or lawns.

Gutta percha string is infinitely the neatest article we have yet seen for tying plants. It is soft, flexible, sufficiently strong, and withal so inconspicuous as to be scarcely visible. It is made of various sizes, at a price moderate enough to admit of general employment. We saw it in use in the garden of J. H. Schroder, Esq., Stratford, a short time since, and at a little distance it was not perceivable, though strained from a pot upwards to the flower-spike of an orchid, with bright yellow blossoms.

We cannot refrain from this opportunity of reverting to the syringe of Mr. Biertumpfel, noticed in the last volume of the 'Florist's Journal.' After several months' constant use, we may with increasing confidence recommend it. By taking care to use clean water,—a precaution necessary with all instruments of the kind, it appears likely to last serviceable for the period of a natural life; and in effect is equal to any we ever used.

LITERARY NOTICE.

Sanitary Reform and Agricultural Improvement.
London: Pierce and Hyde, Strand.

THE above is the titular heading of a pamphlet written by C. F. Ellerman, Esq., in the form of a letter addressed to Lord Morpeth as Chief Commissioner of Woods and Forests, on the very important subject of sewage, as connected with the health of towns and the improvement of agriculture. The author has already acquired for himself a reputation in the scientific world, as the inventor and patentee of a deodorizing fluid, which has been the subject of many curious experiments, and proved to possess all the qualifications of a thorough disinfectant.

In the work before us, which is the first of three intended letters on the matter, Mr. Ellerman's chief object is to show the practicability of preserving to the use of the agriculturist the most powerful manure he can employ, and at the same time effect an immense, and much to be desired improvement in the drainage of towns. By the best means now at command (and though deplorably defective, they are better than we have had to endure) the sewers of the great metropolis itself—an acknowledged source of much physical suffering to the multitudes, who, from their avocations, are obliged to breathe the pestiferous exhalations constantly proceeding therefrom—are yet but partially cleansed; flushing, though it may carry off the lighter and more fluid accumulations, still leaves a sediment, that all the filthy process of stirring and stinking by which it is accompanied but imperfectly removes; and then, too, there is the sickening inquiry of what is done with the contents of these much-vaunted sewers; it is carried into the river, to be pumped up and returned to the inhabitants, to be used in all their culinary and cleaning operations, and to be drunk!

And this is the best result of an enormous annual expenditure; the people of London pay a heavy tax to have the first necessaries of life, air and water, rendered positively poisonous, while, by their present system of sewage, they are wasting an enormous mass of the most valuable fertilizer known, that should, and certainly would, under judicious management, not only relieve them of their existing heavy outlay, but return a handsome yearly revenue, besides the indirect benefit arising from the increased produce of the land consequent on the extended use of cheap and rich manure.

The statistics Mr. Ellerman adduces in support of his argument must be really startling to those who have not given their attention to the subject; backed by such authorities as Liebig, Playfair, Johnson, and others, he tells us the excretiæ of the population of London, calculated by its effects on grain as a productive manure, is of the annual value of £12,974,607, and that of the entire population of the United Kingdom £181,644,531, of which scarce an appreciable fraction is made profitable use of. Nightsoil is shown by the closest chemical investigation to be decidedly superior to the best guano, and yet, from the defective system which prevails in cesspools, privies, and sewers, no calculable quantity is collected, and the trivial amount made use of is so adulterated with ashes, necessary to solidify it sufficiently for removal, as to render it almost valueless.

The plan proposed to obviate this annual loss, and secure effectual cleansing without pollution to our streams or injury to the public health, is the appointment of sanitary inspectors, who shall have power to enforce a more general and better-arranged system of water-closets in lieu of the present cesspools, each closet to be connected with a tunnel communicating with the chief receptacle or tank, placed under ground at convenient distances, and furnished with a cistern containing the deodorizing fluid, the employment of which effectually precludes the possibility of effluvia escaping in the house; and that it may no less certainly be prevented in the emptying of the tanks, air-tight nightsoil-carts, with a pump and hose attached, are to be employed, by means of which the tank may be emptied and the contents carried away without unpleasantness. An increased application of the deodorant coagulates the manure so much that it may be readily dried, and in such a state will be easy of transport, and thus this most valuable manure will be placed within the reach of agriculturists however distant; the proceeds of its sale being calculated to do more than cover all expenses connected with its collection and preparation.

The subject may seem somewhat foreign to our usual floricultural pursuits, but a matter so intimately connected with the preservation of health in places where it is most frequently and readily assailed, is worthy the consideration of all who have minds to appreciate the value of sanitary improvements ; and we strongly recommend the perusal of the work, not only to townsmen but to our country friends, were it only for the sake of what may be termed the general information bearing upon the question. To those for whose benefit it is chiefly designed, a full knowledge of the subject is indispensable, for, in order to relieve themselves of existing inflictions, they must be prepared to support every advance till they secure what may be truly deemed a great national measure.

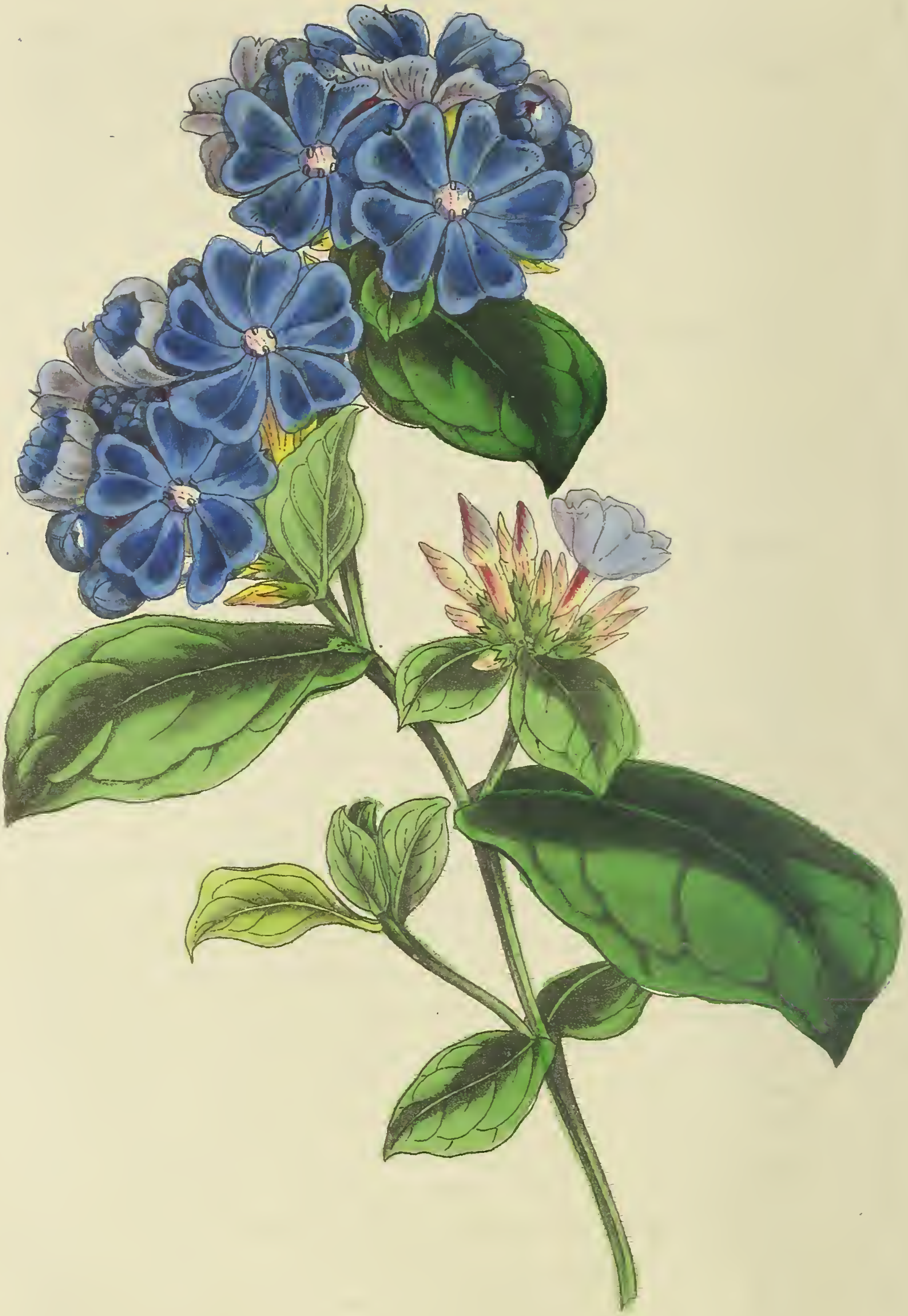
CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS. MAY.

Fruit Garden. Keep a continual watch upon all grafted plants, and loosen or remove the ties as soon as they become too tight for the growth of the stock and graft; also continue to remove all suckers and shoots from the stock as soon as they appear, and thin out the shoots of the graft itself, leaving only one, if a standard is wanted, and regulating wall or espalier trees by leaving a few only of the best-placed and most vigorous shoots. Keep the ground well hoed and deeply stirred among the stocks, so as to encourage a strong and healthy growth. As soon as the fruit of apricots and cherries are sufficiently advanced, so as to indicate the healthiest fruit, begin to gradually thin them, removing at the same time all badly-placed or unnecessary shoots and buds. The same attention is also necessary with peaches, nectarines, and other stone fruits in particular ; the sooner they can be relieved of supernumerary fruit or shoots, so much the more is the tree strengthened. Remove weak and fore-right shoots from figs, and stop those intended to produce fruit when about six inches long. This is best done by breaking them over with the thumb and finger, as the fig is impatient of the knife at all times. It is a practice with some to let the broken tops hang on the shoots for a day or two until they become withered, and the piece of bark by which they hang is then cut through with a sharp knife. Strawberries should be deprived of their runners, except in the case alluded to last month ; the borders should also be well hoed, and the plants mulched with clean straw or other materials before the plants advance too far. Keep the vines thin of shoots by removing the weak and badly-placed ones, and stop those reserved one leaf before the best bunch, and remove all the others, being careful to damage none of the foliage left on the plant.

Continue every available means to keep insects and vermin of all sorts in check, or the enormous rate of increase in many of these pests will render abortive all previous care and labour. One of the best agents in effecting the destruction of insects on walls, and also in assisting the development of the trees, is regular and powerful syringing with clean water, which should be frequently done after the fruit is set and while it is swelling.

Forcing Garden. In the cucumber and melon pits the heat may range from 80° to 90°, allowing it to decline about twenty degrees or more during the night. Maintain a moist genial atmosphere, and fumigate when necessary. Keep the shoots thin, so as to have no more foliage than is completely exposed to the light, and thin the fruit, so as not to weaken the vines by overbearing. Keep melons free of supernumerary leaves and laterals when the fruit is set, and apply less water to such as are near ripening, also giving more air at the same time. Maintain a proper succession of both cucumbers and melons by the plantation of fresh beds. Grow the succession pines in a strong moist heat, watering overhead and closing the frames early in the afternoon; shade in bright weather. Reduce the supply of water to the ripening fruit, and give air more freely. Peaches and nectarines should also have less water and more air as the fruit ripens, and should be constantly attended to, as to thinning, tying in, &c. The same treatment is also applicable to the early vines, where the fruit is ripening, observing not to syringe the fruit after the bloom appears on the berries. Thin the berries and regulate the shoots of the later crops, and keep up a moist genial temperature, as the berries swell at 80° or more in sunny weather, with a free circulation of air. Keep the strawberries in the coolest part of the house, with plenty of air and moisture; less of the last to such as are ripe or nearly so. Make final sowings of French beans, so as to maintain a thorough supply till those from the open ground are in. Water and syringe freely, and fumigate often. Make a fresh mushroom bed about the middle of the month, and keep those in bearing cool and airy.

D. M.



Alfred A

PLUMBAGO LARPENTÆ

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THE GENUS PLUMBAGO.

WITH A FIGURE OF P. LARPENTÆ.

Plumbago, the appellative of a group of pretty free-flowering plants, appears to have been bestowed in relation to their supposed or real medicinal qualities. Pliny says it is derived from *plumbum*, a disorder of the eyes, resembling cataract, which some species were supposed to cure. The roots of *P. europæa* are also esteemed as a remedy for the toothache, and for that purpose are chewed; the juice thus expressed stains the teeth a lead-colour, and hence another not inapt derivation. The species of Leadworts or Plumbago number about a dozen, three of which are of European origin, two from the Cape of Good Hope, three from South America, and the remainder from India. All are free-growing and copious-flowering plants, the European species being herbaceous perennials, and the others assuming a more arborescent form.

P. capensis, obtained from the Cape in 1818, is perhaps the best known of the genus, and is esteemed in the greenhouse for its lively, pale blue flowers, which, with a little management in pruning and the application of stimuli, may be had in continuous succession almost throughout the year. Its strong inclination to ascend is the only objection to be urged against its culture in pots, but this is reducible to a great extent by timely stopping the young branches; and sometimes advantage is judiciously taken of this character, in order to furnish the walls of the erection with an evergreen and almost ever-flowering covering, and the plant is then treated as a climber. In such a position it is only necessary to place it in light, rich earth, and spread the branches in the required direction.

Nor is its culture in pots at all difficult. Cuttings of partially matured wood, of four or five joints' length, root readily when placed in sandy peat, and plunged into a gentle bottom-heat. In spring and summer they strike root in a fortnight, and should then be potted singly into small pots, and nursed for a few weeks in the same temperature they were struck in. As fast as the roots are found to fill their space, the plants should be shifted into larger pots; but through the first season it is not desirable to over-pot them, or the young wood becomes long-jointed, and it is then difficult to form compact plants; just enough encouragement to keep up a healthy growth is sufficient, and, after the development of two or three joints, the shoots should be stopped, to induce bushiness. Supposing the cuttings to be struck in March, a continuance of this treatment up to the middle of August will result in the production of neat little specimens, which may be then allowed to grow uninterruptedly through the autumn, and, if well ripened, in October will bear five or six heads of flowers, which, in a warm greenhouse, will be displayed in winter or early in the following spring. Immediately after flowering, the plants should be cut down and repotted, placing them this time in large pots, and, if any look weak, they will be benefited by being placed in gentle heat. The previous course of stopping must be repeated, continuing it according to the time it is desired the plants should flower. If they are required to bloom in summer, it will be best to forward their growth in heat, and stop them only twice; but, if for winter, the previous year's treatment may be repeated exactly.

The other Cape species, *P. tristis*, succeeds also under greenhouse treatment; but, having brown flowers, is seldom thought worth growing. Those from South America and India require to be grown in the stove. *P. rosea*, one of the number, is a beautiful plant, with large, handsome foliage, and spikes of bright, deep rose-coloured flowers. It is rather difficult to manage well, but is certainly deserving the necessary attention to have it in perfection. Cuttings strike in sandy peat, covered with a bell-glass, and plunged in a brisk heat, though not so freely as those of *capensis*. The plants, when thoroughly rooted, should be potted off into very sandy peat, and nursed under a hand-light on a bark-bed. Their progress is not rapid till the roots reach the outside of the pots, when they generally make a strong erect shoot, which must be stopped by taking off just the terminal bud, and the succeeding repotting should be deferred till the lateral buds on the new wood have started. Shifted then into pots a couple of sizes larger, using well-drained sandy peat, and assisted with a brisk, moist heat, they will form three or four, or more, strong, healthy shoots, and perfect them by the autumn. The production of flowers should not be allowed in the first year, but, after keeping them nearly dormant on a light shelf in the stove through the winter, they had better be cut down, repotted, and plunged into heat early in the following spring; and when the stems are three or four times multiplied, both in number and strength, they may be permitted to bloom. Their appearance in this condition is very pleasing, and of course their beauty increases with their size, so long as they can be maintained in health, after which it is better to relinquish the old ones, and begin again with new plants.

P. mexicana and *zeylanica* may be rather more easily cultivated under the same treatment. They have each white flowers, and *zeylanica* is very pretty, closely resembling *capensis* in its manner of growth and flowering. *P. scandens* and *occidentalis,* sometimes falsely called *zeylanica,* are stove-climbers of limited range, suitable for large trellises, in pots, or the bottoms of pillars in the house; they also have white flowers, and are not difficult in their management. The best mode of treating the climbing species is to shift them annually, if grown in pots, as soon as they begin to grow, and through the summer to bend the stems spirally round their support, which restricts their rambling in proportion as the coils are more or less erect; and, in the autumn, after the flowering is over, the branches may be cut closely in, and the plants kept dormant till the next season. There is another stove species, common in South America, called *rhombifolia,* an annual, with blue flowers. It succeeds with the treatment of Balsams and such things, but is scarcely worth the trouble of cultivating. The hardy species are *lapathifolia* and *micrantha,* with white flowers, and *europæa,* with blossoms of a cerulean tint. They are pretty, though not striking, but as they flower freely through the greater part of the summer, are worthy a place among hardy plants. They make the best appearance in peat beds.

The new species with which we illustrate the genus (*P. Larpentæ*) belongs to the Indian group; it is a native of China, where it was originally discovered by Mr. Fortune, when collecting the rare plants of that empire for the Horticultural Society of London. The ruined ramparts of Shangai is the habitat given, and the appearance of the plant, even in so unfavorable a position, is described as strikingly beautiful. The honour of introducing so fine a thing appears due to Mr. Smith, a resident in China, who in 1846 sent it to Sir G. Larpent, and falling into the hands of so good a cultivator as Sir George's gardener, Mr. Eyles, its merits were soon tested, the experience of the following season satisfactorily proving it to be the best of the genus. From the information we have obtained respecting its management, it seems to possess peculiar habits, differing from all the other species, and so requiring a modified treatment, in which some particulars apply to it alone ; it is one of those plants which, though sufficiently robust to grow with vigour in the fullest exposure to our climate in summer, can hardly be preserved through the winter in a greenhouse : there are many such, and a familiar example may be instanced in the Heliotrope. This seeming tenderness may, however, be regarded as the effects of a confined stagnant atmosphere and long-continued diminished light acting on a constitution naturally adapted to an opposite position, rather than an inherent want of vigour. In its native station the plant enjoys a clear sky and a considerable elevation of temperature, at all times greater than is usual with us, the absence of which in our autumnal months leaves the system of the plant replete with unassimilated secretions, and in an immature condition, most unfavorable to its preservation in winter ; and unless it is kept in a growing state, there exists a great probability of loss among the branches or even of the entire plant, from damp or "fogging." Hence has arisen the practice of keeping such things in a temperature intermediate between that of the greenhouse and the stove ; the object being to assist the elaboration of sap by the development of more leaves, and so by working up undue secretions prevent a disruption of the vessels of the plant. In propagation, soil, and general treatment this species may be classed with *P. capensis,* with the single exception, that it is safer in a slightly elevated temperature through the winter. Its capacity to grow and flower in the open air in summer renders it of the utmost value for ornamenting the flower-garden, the copious display of lovely bright violet flowers which distinguish it being quite unrivalled, or in fact unique, no other plant we possess being so well calculated to further the desires of the flower-gardener in his attempts to equalise tones and maintain the proper proportion of xanthic and cerulean colours in the parterre. Its average height may be stated as eighteen inches or two feet, and if moderately strong plants are stationed in peat and loam, at about the same measurement apart, they will form a brilliant mass, and continue good till late in the autumn. The plants may then be taken up and potted without cutting, and being kept in a warm house through the winter, the tops may be struck in spring, and will furnish good specimens for turning out in the same season.

LESCHENAULTIAS.

This fine genus of New Holland plants has advanced so rapidly in public estimation within the last few years, as to be now indispensable to every good collection, and the prominent position occupied by several of its members at all the best floral meetings fully prove the distinction to be well placed. Specimens of *L. formosa* are more frequently met at horticultural shows than perhaps any other plant, and yet it may be taken as a severe test of the cultivator's abilities, for it cannot be grown without good attention and skillful management. Like most of the plants from the same country, this is remarkable for its susceptibility to injury from sudden fluctuations, either of temperature or the supply of food, too much heat, cold, moisture, or drought are alike fatal, and though no plant can grow with greater freedom or flower more abundantly than this when in a healthy condition, so also none are more quickly or irretrievably ruined by excesses of any kind, and the remark applies to the whole of the genus; for place them in proper soil, and supply them duly with the grand agents in cultivation, air, light, and water, and nothing can be more satisfactory than their progress; but neglect them, if only for a couple of days, and it will certainly be apparent, probably in the death of the most promising.

As all the species require the same treatment, I shall confine myself to that pursued with some plants of *formosa*, which are now in perfection. In March 1846, healthy young plants were procured, which just filled four-inch pots, having round branching heads, about three inches high, and spreading the diameter of the pots. Some care was exercised in selecting the soil for them, and this is necessary, for without the proper quality we start upon a wrong basis; peat, with plenty of decayed vegetable matter in it, and yet not too light, is the principal ingredient. It is not always to be had of this medium quality, but by careful selection a near approach may be made, and I would always endeavour to have it rather too porous than of the opposite tendency, because then the addition of a small proportion of fibrous loam will bring it to the requisite tenacity. Sand of the purest kind is always necessary, though, of course, in the more porous kinds of peat less is required than in those of the opposite character, still it may be used liberally under all circumstances, for no mischief can arise even if a little in excess. The plants in question were transferred from the small pots to others just double their size, the drainage being secured by an inch and a half of crocks in the bottom of each, over which a thin layer of moss was laid, the coarser portions of the soil next, and then, as the remainder was placed in the pots, small pieces of stone were mingled with it, the peat being merely broken up with the hand, retaining the roots in it. In potting, the neck of the stem was kept just level with the rim of the pot, which I believe to be the best position, as if lower, it is likely to suffer from being too wet, and if more elevated, it must always be dry, one extreme being as dangerous as the other; the soil was pressed moderately firm, and, after a gentle watering, they were set upon a shelf in the greenhouse, close to the glass of the roof, and where air could be admitted. Their progress here was so satisfactory, that by the middle of June they required to be again shifted. In the interim they had been regularly attended with water, and the young branches were drawn into form with small sticks, and had been twice stopped, being careful throughout the whole of the season to remove all flower-buds as they were produced. At the second repotting they were placed in twelve-inch pots, and deeming the greenhouse too confined for them at this season, they were placed in a cold frame, having a thick layer of ashes to stand on, and the lights were kept closed, and slightly shaded for a week or ten days, till it was supposed the plants were re-established, when air was liberally admitted, by throwing the sashes back morning and evening, drawing them on again at night, and at noon, when the sun shone hot, they were tilted back and front, and covered with a thin shade.

All my subsequent experience fully bore out the correctness of the principles I had determined to start with; light, pure and uninterrupted, is most essential, with only the slightest shade that can be employed to break off the fiercest rays of the sun in summer, and proportioning the admission of air to the supply of light; they were never closely shut up, except in winter, when positively necessary. Some cultivators advise a gentle heat, as that of a vinery just starting, for growing these plants, but I found it, at least, unnecessary, and cannot help believing it to be rather injurious than otherwise; my observations and inquiries tending to establish a connexion between such treatment and the sudden deaths, which, unfortunately, but too often occur among large specimens.

Water, of course, exercises a great influence, and much care is required in its application; it is difficult to describe the variations which are sure to arise in the proper quantity, dependent on the progress of the plant, the kind of soil, or the state of the atmosphere, all of which have to be considered, each time the soil is moistened: in a general way, I am decidedly in favour of a thorough soaking; but then it must only be given when wanted, it will not do to saturate the roots at stated intervals without regarding their condition. A complete knowledge of this subject is to be gained only by experience, and should, therefore, be trusted only to practised hands: an idea, and generally a correct one, may be gained of the state of the soil by sounding the pot; a smart rap on the sides with the knuckles will produce from a dry pot a ringing sound, which is absent if the interior is wet; this, however, is not to be implicitly trusted when they have been in use for any length of time. In the summer, and when actively growing, the plants require a sufficient quantity to wet the soil thoroughly, at least every day, and the nigher the roots are to the sides of the pots, the more often will it be necessary to water them in the winter, a moderate application, once a week, will generally be sufficient.

The plants before mentioned were placed out of doors from the end of August till the middle of September, to give them an opportunity to ripen the new wood, which by this time had nearly covered the top of the pot; and when in winter quarters, were stationed on the same shelf as before. They were potted again in March and July of 1847, and also in March of the present year; they are now two feet six inches in diameter, and about two feet high, literally covered with flowers. The substance of my observations in the course of their progress may be summed up thus:—put in rough peat of medium texture; keep the plants constantly where they may receive the greatest light; let the supply of air and water be proportionate to the advance of the roots and branches; remove the flowers from young growing plants; shade the new shoots from the strongest sunlight, and mature them thoroughly in the autumn by exposure to the sun and air.

As regards training, I would recommend the cultivator to begin early, and by thus laying a good foundation, he will render his future operations much less troublesome; when the plants are first potted, draw out the lower branches, and fasten them, horizontally, across the mouth of the pot; stop all the upper ones by pinching off their points, and arrange them equally on all sides of the plant, so as to form a circular head. By frequent stopping, *formosa* may be rendered so bushy as to require no other support than a central stick for the main stem; this is, however, the easiest of the family, because naturally dwarfer than the other species, some of which, especially *biloba*, are so strongly inclined to run out long straggling stems, that it is only with the most constant care it can be kept in order; still, by commencing while the plant is young, and persevering through the first two years of its progress, its rambling habit may be checked, and handsome specimens attained.

The genus contains seven species, the most beautiful of which are—

Formosa. Too well known to require description, and the only remark worth making in respect to it is the extraordinary fact, that no seminal varieties have yet been raised; it seems strange that no attempts should have been made to improve in this way such a favorite plant, for improvement in the size and brilliancy of the flowers would reap a rich reward.

Biloba. Of this species there are several varieties, though cultivated but for a short time, as compared with the preceding; the best of them is one called *nana*, because of its more compact dwarf habit; the flowers of all are a bright cerulean blue, exceedingly pretty, and but for the difficulty in growing, really handsome specimens, this species would certainly stand at the head of the group.

Laricina. This is, I believe, identical with what is usually considered a variety of *biloba*, and known among cultivators as *B. violacea;* it differs from that species only in having flowers of a deeper blue, or violet tint.

Arcuata. A recent species, with very large red and yellow flowers, promises to be useful; the only objection to be taken against it is a degree of looseness in the habit, not so bad, certainly, as in *biloba*, yet still of sufficient extent to render its culture unsatisfactory, or at least entailing much trouble in the production of fine specimens.

J. ROBERTSON.

RAISING SEEDLING FLORIST'S FLOWERS.

EVERY florist who pursues his vocation *con amore*, at some time or other tries his hand at the production of seedlings. It matters little what he grows, but an attempt at improvement is sure to take place. Though hundreds of florists fail in the pursuit, and millions of seedlings are annually consigned to oblivion, still the fame of the fortunate urges him to the course, and not unfrequently without the least determinate plan, trusting everything to a hap-hazard chance, believing only that the production of fine varieties begins in the harvesting of the seed. Such a system, or rather the want of one, can lead only to disappointment; and now that the season is at hand for taking the first step in the pursuit, in order that it may be in the right direction, it may be well to lead the florist expectant to look more closely into his objects, and predeterminately to settle his plans, that he may secure to himself all the assistance which the experience of others and the evidence of science is calculated to afford. The laws which regulate the sporting of flowers are as yet obscure; we only know that once the disposition is excited, by a continuous raising in any certain direction, we may carry the produce so far from its normal character as to be scarcely recognisable.

The object of the florist is usually an increase of the floral organs; by his efforts stamens are expanded into petals, and the flower with a single whorl of coloured leaves becomes enlarged and beautified with a series of such leaves; or he desires to add brilliancy and new colours to his already double flowers. This he accomplishes by the pertinacious adherence to a set of rules, which serve for the foundation of his labours, for it is seldom any striking change is effected but by a continued perseverance in one direction. Increase in the size or number of the organs of a flower is generally obtainable by imparting extraordinary vigour to the plant. Some are more readily induced than others; but if it can be once started from its proper form, there is no definable limit for the alterations. Double flowers are a consequence of an unnatural increase in the reproductive organs—the stamens are enlarged and become petals, and this appears to be the ultimatum of enlargement, for there is a tendency in all extra-natural flowers, especially such as have been driven by culture from their normal condition to an increased size, to develop further addition of vigour in this transformation of the stamens into petals, and so become double; and when such an inclination is apparent, it may be regarded as evidence that the utmost size of the flower in a single state has been attained. The pansy and geranium are now just in this state of transition; they are not likely to produce larger flowers, but a very little trouble would induce another row of petals. But, it will be seen, this change is effected so entirely at the expense of the seminal organs, by converting the principal part of them into another form, that the production of seed by such flowers is almost impossible; there is the style left, truly, but there is no pollen to fertilize it, and hence the difficulty of obtaining seed from the better varieties of such things as carnations and pinks. It may occur to the mind of the non-professional, that certain flowers, commonly called double, such as the dahlia, marigold, &c., produce seed in abundance; but it is to be explained, these are not properly double but composite flowers, each petal of which is a distinct flower, containing pistil and stamens in itself, and therefore unchanged by art; the alteration effected by the florist in their appearance being not a transformation, but a positive addition of parts.

With regard to the colours of various flowers and their dispositions, many ingenious theories have been propounded, though none are quite reconcileable in all their assertions to facts which occur among vegetation. It is not long since it was deemed impossible that cerulean and xanthic colours could exist in the same genus; instances of the contrary, however, are by no means scarce, not only in the same family but in individual flowers, and therefore the impossibilities of former times may yet be accomplished. Blue dahlias, roses, or pæonies would not cause the surprise now that would have hailed them a few years since.

It is to cross-impregnation that the florist owes his chief opportunities of regulating the colours of his productions. Soil may have something to do with their intensity, but will never permanently affect them; but by crossing, he may so fundamentally change both their tone and arrangement as to constitute a positive alteration, and thus originate new varieties, and here begins his power over the plants cultivated. By a proper knowledge and judicious exercise of this power, the prospective character of his seedlings may be almost foreknown, or at least the danger of degenerating can be avoided, and having definitely settled the proposed object, whether it be increase of size, improved form, or brighter colours, he has only to select the most promising varieties to operate on, and continue in an undeviating course till it be attained. It is true, there are some flowers so thoroughly broken into the habit of sporting, as to produce seedlings quite distinct one from another and their parent, without crossing, and it may be argued that with them the trouble of artificial impregnation is unnecessary; but the increased probability of securing an improvement in the seedlings, and the chance of directing their variations in the most desirable way, must be worth the little pains necessary to secure seed of the right sort, especially if we consider the subsequent trouble, which may be all thrown away, unless attention is given to this part of the subject. Those who entertain a notion of attempting the growth of seedlings should therefore take time by the forelock, and in the course of the ensuing blooming season secure for themselves, and of their own growing, the seed most suitable to their purpose. How to obtain seed from the best flowers is often a puzzling matter, for whether double or single, the finer they are bred the less they are inclined to its production. This is a purely practical matter, and varies with the nature of the subject. Picotees and carnations, from the absence of stamens in their flowers, are among the most difficult. A careful search should be made among the petals of the thinner flowers, and the few that can be collected must be made to impregnate as many neighbouring styles as possible. In others, which have pollen of their own, the utmost care should be taken to remove it before the anthers shed it in a ripe state, or any attempt at crossing with another kind will come too late. Above all things, let the female or seed-producing flower be the finest of its kind; that obtained from two blooms of the same plant, one of which may be perfect and the other inferior, will yield plants differing one from another in precisely the same manner as the flowers which produced them.

HORTULANUS.

HOW TO SECURE GOOD STOCK SEED.

GOOD double stocks are a desideratum in every garden, and many are the out-of-the-way projects for obtaining them, even the old absurd notion that, to be good, the seed should be saved from plants intermingled with others having double flowers yet exists; for it is not many days since a person solicited the favour of a friend of mine, to stand his single stocks among my friend's double ones; and as this idea is held by some who should know better, but will not give themselves the trouble to think on the matter, it may be well to remind them of the absurdity they entertain. Double stocks have no stamens, they are changed into petals, therefore they can have no pollen, and in the absence of this it is not possible to conceive in what way they can affect the single ones. Another fancy is pertinaciously insisted on by some, who bring something like a theory to back their assertion, that it is only such flowers as have an extra petal which produce seed likely to yield double varieties. Was this notion acted on throughout, there would soon be a dearth of stocks; others say, in planting, you should select those with ramified roots for double ones, the remainder with tap-roots being certainly single. All these infallible directions are in their turn followed and abandoned as delusive by those who are really anxious to secure a display, and they fall at last to the opinion that to be good the seed must be imported. Now let us look at the rationale of the subject: double stocks are a consequence of some uncommon condition in the parent which bore the seed, and every circumstance goes to prove that condition to have been an extremely vigorous one, for no one ever obtained good flowers from small inferior seed. Let the question be fairly tested by experiment: plant the single stocks in rich ground as early as may be prudent, so as to have them strong before they commence blooming; trim off all the lateral shoots, so as to throw the whole vigour of the plant into the central stem, and, to further improve the quality of the first-formed seed, remove the point of the main stem, and after properly ripening the remainder, sow it again upon light rich earth, and if the produce is not nearly nine tenths double, I shall be gravely deceived; this is the practice with the Dutch florists, and indeed all who raise thoroughly good seed, and hence the superiority of that which we import. It does not matter whether the sort be the little ten-week, the larger intermediate, or even the giant itself; they are operated on by the same cause, which is so simple as to come within the comprehension and means of all, and may be fully proved in a couple of seasons.

J. T. N.

DESCRIPTIVE LIST OF NEW PLANTS.

GESNERIACEÆ.—*Didynamia Angiospermia.*

Alloplectus concolor (Hooker). An undoubted congener with *Alloplectus diochrous*, having the same habit, but smaller flowers; calyx and corolla uniformly red, the latter much more ventricose above, at the upper part of the tube, with the mouth more oblique. It is, we presume, an inhabitant of Brazil, having been sent to Kew by Mr. Galeotti, in 1848, under the garden name of *A. eriocalyx*, without any indication of its locality.—*Bot. Mag.* 4371.

Agalmyla staminea. A native of Java, whence it was lately introduced by Messrs. Veitch, of Exeter, through their indefatigable collector, Mr. Thos. Lobb, who discovered it growing in humid parts of mountain woods.

It is an epiphyte, allied to the Æschynanths, with alternate, oblong, acuminate, toothed leaves, fleshy, bright glossy green on the upper side, downy beneath and on the edges, about six inches long and four broad. The flowers are diandrous, produced in dense fascicles at the axils of the leaves, each fascicle containing about fifteen flowers; calyx tubular, smooth, green; tube of the corolla two inches long, of the brightest scarlet; throat wide, clothed with hairs; limb imperfectly two-lipped; upper lip two-lobed, lower three-lobed; stamens exserted; filaments extending an inch beyond the tube of the corolla, of a bright purple.

It is easily cultivated; the same treatment as is given to the various species of Æschynanthus suits it well, namely, the temperature of a warm and moist stove, with liberal watering and syringing during the period of growth, but in the season of rest to be kept nearly dry.—*Pax. Mag. Bot.*

PROTEACEÆ.—*Tetandria Monogynia.*

Isopogon attenuatus (Brown). A native of Lewin's Land, on the southern shores of New Holland, according to Mr. Brown, its first discoverer. Allan Cunningham collected it at King George's Sound, Preiss and Drummond at Swan River. The latter sent us seeds, which produced flowering plants in the spring of 1847. It is a species nearly allied to *Isopogon longifolius,* but abundantly distinct, growing from two to three feet high, with long, scattered, linear- or oblong-spathulate leaves, mucronate, much tapering at the base, glabrous, coriaceous, and obsoletely three-nerved; and produces a terminal, hemispherical capitulum, formed of numerous palish-yellow flowers.—*Bot. Mag.* 4372.

CACTEÆ.—*Icosandria Monogynia.*

Echinocactus chlorophthalmus (Hooker). Whatever reflections may be made on the uncouth and grotesque forms of the majority of individuals in the Cactus family, it must be conceded of the Echinocactus group especially, that few plants excel them in size and beauty of the blossoms. In the present instance, a single flower equals or exceeds the height as well as the breadth of the entire plant, while the glossy purple of the starry petals, pale at their base, with the yellow mass of anthers, and the almost emerald green of the eye-like stigma, cannot fail to call forth admiration. It inhabits Real del Monte, Mexico. It blooms in the summer months, and will rank next to *E. hexædrophorus.* The plant is nearly globose, about the size of a small orange, glaucous-green, clustered, with about ten or twelve deep furrows, the intermediate ridges divided into six or eight somewhat hemispherical, but very irregular mammæ, at the top of which is a woolly areole, bearing seven to ten slender, acicular spines, half to three quarters of an inch long, spreading, but the central one is longer and stronger than the rest. Their colour is pale brown, red at the base of the younger ones. Flowers large, solitary from near the summit of the plant.—*Bot. Mag.* 4373.

VERBENACEÆ.—*Didynamia Angiospermia.*

Casselia integrifolia (Nees). This beautiful stove shrub is a native of the woods of Brazil. In 1843 it was brought to this country from the Continent, Messrs. Rollison, of Tooting, receiving plants of it from M. Neumann, of Paris. It has rather ample foliage, and the large loose racemes of purplish-blue funnel-shaped flowers are very effective; they are produced from the axils of the leaves near the extremities of the branches. In cultivation it is a hardy stove plant, requiring a moderate temperature not much exceeding a warm greenhouse, and should be potted in a mixture of peat, loam, and sand, with plenty of room for the roots.—*Pax. Mag. Bot.*

MALPIGIACEÆ.—*Monadelphia Decandria.*

Stigmaphyllon ciliatum. The genus *Stigmaphyllon* was formerly associated with *Banisteria,* and contains some very handsome species, all climbers, but many are yet unknown in British collections. They are natives of Brazil, where, in the woods and thickets, they grow abundantly, and are certainly deserving the attention of collectors. The present species was introduced in 1840, and flowered in the year following at Sion House. It is a handsome stove plant, the flowers are large, produced in axillary umbels, and are of a very bright yellow. It grows freely in a light, turfy loam, or a mixture of loam, peat, and sand.—*Pax. Mag. Bot.*

ASTERACEÆ.—*Syngenesia Polygamia.*

Echinacea intermedia. This fine, hardy, herbaceous plant grows about two feet high, and is of robust habit; the stem is clothed with short bristle-like hairs, and streaked with dull brown; leaves scabrous, dark green, nearly heart-shaped at the base, verging towards the upper part to ovato-acuminate; flowers showy, four or five inches in diameter, bright reddish-purple or blue; involucrum green tinged with brown; florets of the ray large and spreading; disk elevated. It blooms from the end of July until the beginning of November, and is one of the finest of our autumnal border flowers. Like all the other species of Echinacea, it is, we presume, a native of the cooler parts of Mexico, and of recent introduction, but when, or by whom brought to this country is uncertain. Syn. *Rudbeckia intermedia.—Pax. Mag. Bot.*

ORCHIDACEÆ.—*Gynandria Monandria.*

Coryanthes Fieldingii (Lindley). The flowers are pendulous and inverted, so that the apparatus of the column hangs downward, instead of being erect. The general colour of the parts is pale brownish-yellow, a little mottled and stained with crimson in an irregular manner. When closed, the flower is about five inches long, and three inches wide. As it unfolds, the sepals and petals, which are membranous, and bear no small resemblance to a bat's wings, turn back, seem to fold up, and finally hang drooping at the back of the lip and column, in which organs, as is well known, the singularity of the genus resides. The lip is borne by a thick horizontal arm an inch and a half long, which proceeds from the top of the flower-stalk, and consequently from the lower end of the column. Right and left of its base are placed two softish, fleshy, pale, ear-like lobes, which are the organs of secretion, a sweet fluid continually dripping from them as long as the flower is in vigour. At the other end, this horizontal arm expands into a convex cap or hood, hairy in front, but bald on the crown; a little compressed from the back, and two inches across its principal diameter. From the cap hangs down a large fleshy goblet, smooth at the edges, flattened at the ends, two inches deep, and as many wide, and connected with the cap by a hollowed fleshy stalk, which is strongly marked with various transverse fleshy folds, warts, and ridges; into this goblet drips the honey secreted by the two ears at the base of the horizontal arm which carries the lip. On the side next the column the goblet is opened, and near the bottom of this opening it is furnished with three sharp-pointed lobes, of which the lateral curve downwards, and the middle one stands erect, rising just high enough to come in contact with the head of the column, which grows downwards so far as almost to touch it. The column is a large, fleshy, club-shaped body, two inches and a half long, and throwing back its head, till its bosom becomes so round and large as to be comparable to the breast of a puffer pigeon. The head of the column divides into two short, flat, fleshy, curved arms, between which the anther is seated.—*Journ. Hort. Society.*

FLORICULTURAL HINTS.

June is a busy month with the florist, and, if dry weather sets in, his labour is immensely increased; for, not only is there the extra trouble of watering, but insects always multiply so fast at such a time, that the attention of necessity given to them usually throws the routine work behind. Pinks must be well attended just now; no time should be lost in disbudding. There is more art in this operation than is generally believed, or at least it requires a very correct knowledge of each variety to do it properly. The thin-flowering kinds, or such as have only two or three tiers of petals, should have all the buds removed, except the first lateral and the terminal one, or, if the plants are weak, only the the last should be retained; other kinds with very full flowers, such as Ward's Great Britain, may be allowed to carry all or nearly all their buds. This variety is truly fine when well managed, but from excessive vigour, is too often irregular, and, without a good deal of attention in the opening, often splits. The opening pods must be regularly looked to, and tied before a tendency to split is apparent. Gutta-percha string, mentioned in a previous number of the 'Florist's Journal,' appears particularly suited to this purpose, it has sufficient elasticity to allow of the swelling of the buds, and thus saves the trouble of untying the ligatures when the flowers are half grown, a matter often neglected, to the disfigurement of the blooms. There must be no lack of water to these plants while the weather is dry, and propagating should begin before the expiration of the month.

Tulips may be got up early this season, the dry weather of May has ripened them well, and the probability is they will turn out sound and well grown. The tyro may be told in getting up these roots, he should employ his hands in preference to the trowel or any other tool; something of the kind is allowable just to break the crust of the surface, but should not be trusted near the bulbs. As they are taken from the ground clear off the mould, and place them in the drawers of the cabinet; dry them in a shaded airy place for a fortnight, then clean them thoroughly, and after a couple of hours in the sun they may be considered fit to put away.

Roses require much attention this season, and unless very constantly looked over for grubs, will be deficient of flowers even yet. Green flies swarm in warm places, but they are less to be feared than those lurking leaf-rollers, for whom a good-sized bud is no more than a meal. When the sun declines in the evening, the garden-engine should be brought out, and the trees receive a good washing once or twice a week; this will keep down insects, and render the foliage healthy and handsome. Those in pots are just now in their glory, and, if well managed, are unsurpassed by any flower; the China and Bourbon roses should be removed, as their beauty declines, to a cool pit, and by shading and frequent syringing they may be induced to begin a new growth directly, so as to flower again next month. It will be advisable at the same time to cut back the shoots which have borne flowers, and if additional stock is required, such pieces may be struck under a handlight.

Dahlias have had a very trying time since they have been out; the frequent waterings necessary have rendered the ground-surface bound, which must be speedily remedied by forking it nicely up between the rows; when this is done, a good watering may be given, and some mulch laid about the stems will perhaps carry them through the month without further trouble. The principal stakes should be placed without delay, or some danger will be incurred of injuring the roots, and as lateral branches are produced, a little timely thinning will save much trouble at a future stage. I had the pleasure of examining a novel mode of planting these flowers last season, which may be worth mentioning. The land where they grew was very light, and much trouble had previously been felt in supplying them sufficiently with water, to obviate which was the principal inducement to the plan. The space they were intended to occupy was formed into a series of beds, sunk fully eighteen inches beneath the surrounding paths, a process readily accomplished by throwing the surface of the beds upon the walks, and so by lowering one the other was raised, a twofold result being gained, the roots of the plants were kept cooler, and the flowers brought to a more agreeable level with the vision; besides which the bottoms of the stems (always unsightly) were completely hid, plenty of room secured for mulching, and whatever water was given remained on the beds. To render the effect as pleasing as possible, the margins of the beds were planted thickly with dwarf fancy varieties, which being partially pegged down to the sides of the paths, effectually excluded the appearance of ditches, which at first it might be expected the sunken beds would present. Of course, the soil in the beds was properly prepared, and the plants succeeded admirably; such a plan upon heavy or springy land might be impracticable, but where the land is light and apt to dry quickly, will be found very beneficial.

Carnations and *Picotees* will require the same attention as before advised for pinks; they must be constantly tied to their sticks as the stems advance, and the superfluous buds removed, tying the pods of the most forward just as they are about to expand; a thin slip of cane or wood passed down each division of the calyx is of much assistance in enabling the flowers to open regularly. With regard to the employment of shades for these, and indeed all other flowers, the beginner cannot be too strongly urged to be cautious; it is a very common mistake, arising in a commendable desire, to indulge in their use often to a ruinous extent; shading, it must be remembered, is beneficial to the bloom, but of a contrary tendency to the plant.

The *Ranunculus* bed must be kept moist, and the readiest way to do it, is by spreading a thin layer of partially decomposed manure between the rows, the subsequent waterings carry down the strength of this covering, and the plants are thus doubly benefited at less than half the trouble. Keep them quite clear of weeds, and occasionally stir the soil between the roots.

CALLA ÆTHIOPICA.

We are requested by a correspondent to say how this very popular plant may be cultivated in a window, so as to produce flowers; and the reply is offered the more readily, from a remembrance of the many distressed-looking specimens, whose debilitated ghastliness has ere now occupied our imagination for days together, and whose wasted forms we would fain resuscitate. In the majority of cases, where the plant has the misfortune to be placed in a handsome basket, inside or out of a sitting-room window, it is absolutely starved. There is the carpet or the stand or the window-sill to be considered, and the previous cultivator's directions to "water it carefully," are misinterpreted to mean "be careful the water is not spilled." Many a time, in our suburban peregrinations, the impulse has been almost irresistible, to ask permission to give the poor drooping plant what, "in language mute, yet eloquent," it was asking for,—a good soaking.

In a wild state, the species is a marsh plant, and by nature a glutton. The little-and-often system of supplying it with food is therefore entirely opposed to its habits; and hence the origin of very many failures.

To explain its proper management, we will suppose a tolerably strong plant is procured in March, not a blooming specimen, but a full-sized growing offset. Let it be potted in a mixture of loam and thoroughly decayed manure; the proportion of the latter may vary from a third to one half that of the loam; a little sand is a beneficial addition when the mass appears too close or heavy; and, in potting, place one large hollow crock over the hole in the pot. Keep the neck of the plant half an inch below the rim of the pot, and the soil of the same height. If placed in a warm, sunny window, it will grow rapidly, and for the first month should be watered every alternate day, giving each time so much that it will run freely through the pot; by the middle of April, as the sun gains power, and the growth of the plant is yet more active, the watering must be increased to a daily supply, and, by placing it in the air, the new leaves will gain strength and the moisture of the soil will be found pretty nearly absorbed by the evening. In May it will bloom, if its progress has been uninterrupted, and, from the time the flower-stem is visible, onwards through the summer, it should stand in a pan containing a little water. While the flowers are in perfection, it will of course be kept where its beauties can be enjoyed, but afterwards, in the hot weather of summer, it should be placed in a shaded spot, out of doors, being abundantly supplied with water at the roots, and occasionally sprinkled over head, to remove dust. In July it will probably require to be repotted, which should be done as soon as its roots have reached the bottom of the first pot, placing it this time in one two sizes larger than the previous; and, by continuing it in the shade, a second growth will be induced, which is to bear the first flowers of the following year. Its size, by the middle of September, should have increased to about six or seven leaves, and, from that time till the first week of October, the best position for it will be the most sunny part of the garden; and, having very little or no water, the requisite degree of maturity will be imparted to the roots, and the plant brought into a fit state to meet the winter. As our autumnal frosts are often confined to the second week of October, it will be well to carefully guard it just at that time, but for a month afterwards, if the weather be fine, it will be better out of doors than in. The winter treatment must be confined to an endeavour to keep the plant quite dormant; if it grows at that time it is rather an injury than otherwise, and therefore no more water should be given than will just keep the leaves erect. The fullest exposure to the light and frequent cleaning will preserve them in health, and their handsome appearance must be considered ample recompense for this little attention.

On the return of genial weather in spring, it will soon evince an inclination to grow, and must then be moderately watered, but should not be repotted or receive a full supply of moisture till it has bloomed. In general terms, it should never be dry in summer, or wet in the winter, receiving all the light possible through the latter period, and being rather densely shaded in the former. To flower well, it must be grown fast and freely, after which its season of rest must be quite as decided.

We have continued the popular name, *Calla,* because best known, though it is now some years since the species was removed from that genus. It is now called by botanists *Richardia æthiopica,* a name given by Kunth in compliment to L. C. Richard, an eminent French botanist. It is a native of the Cape of Good Hope, whence it was introduced about 1730, and has ever since been a general favorite. It forces well, producing its large, sweet-scented flowers in heat, from November till the natural season; and as an aquatic is equally beautiful.

CALCEOLARIAS FOR BEDDING.

It is matter of much regret that the once favorite class of Calceolarias, known as the shrubby kinds, should have been so generally neglected, as to become so destitute of variety, as is at present their condition. To the flower-gardener they are invaluable, and, with but a portion of the care which has been bestowed upon their more fortunate rivals, the herbaceous varieties, would have been certainly not less interesting both for pot culture and the open air. The superiority of the shrubby Calceolarias over the herbaceous is found in the extra strength of their stems and flower-stalks. The great weight of the larger flowers of the latter class, acting on their slender and brittle stems, renders them particularly liable to injury from rains and heavy winds; their appearance after a rough night is most miserable, nor can the utmost care prevent or recover them from such accidents. It is otherwise with the shrubby varieties; they are capable of bearing up against the worst weather of our summers, and, from the number and brilliancy of their flowers, are among the most effective bedding plants we possess. It is strange, then, so desirable a class should have been suffered to fall into such a neglected state, and still more extraordinary will it be, with the existing acknowledgment on all hands of their very decided superiority for purposes of the kind, if within a few years the impulse now at work does not result in some active steps towards reinstating them in the position they are so eminently calculated to fill with a beauty and fitness peculiarly their own.

Limited even as is the class at present, there are some varieties quite indispensable to a well-furnished flower-garden, and, bearing in mind that it is not the beauty of individual flowers, but their effect as a whole, joined with an enduring interest, that constitutes the fitness of a plant to such purposes, where shall we find a substitute, among yellow flowers, for the old *C. viscosissima,* it is decidedly before anything I ever met with in a rather extended practice; it, or some of its near allies, must be grown wherever the colour is required. And for masses of a dark colour, such as purple, or the peculiar receding tint of brownish crimson, sometimes so desirable among stronger hues, where shall we find better subjects than among such varieties as Julius Cæsar, Pluto, Indian Chief, or Nabob; or if gayer tints be required, how supersede the crimson or brown blotches on a bright yellow ground of such kinds as Harlequin, Magician, Enchantress, or Clara. Another excellent variety, because of the amazing abundance of its larger flowers, is the Lord of the Isles. This is almost a cream colour, and, in the absence of a more positive complemental colour, may be employed between the warm shades of red or brown.

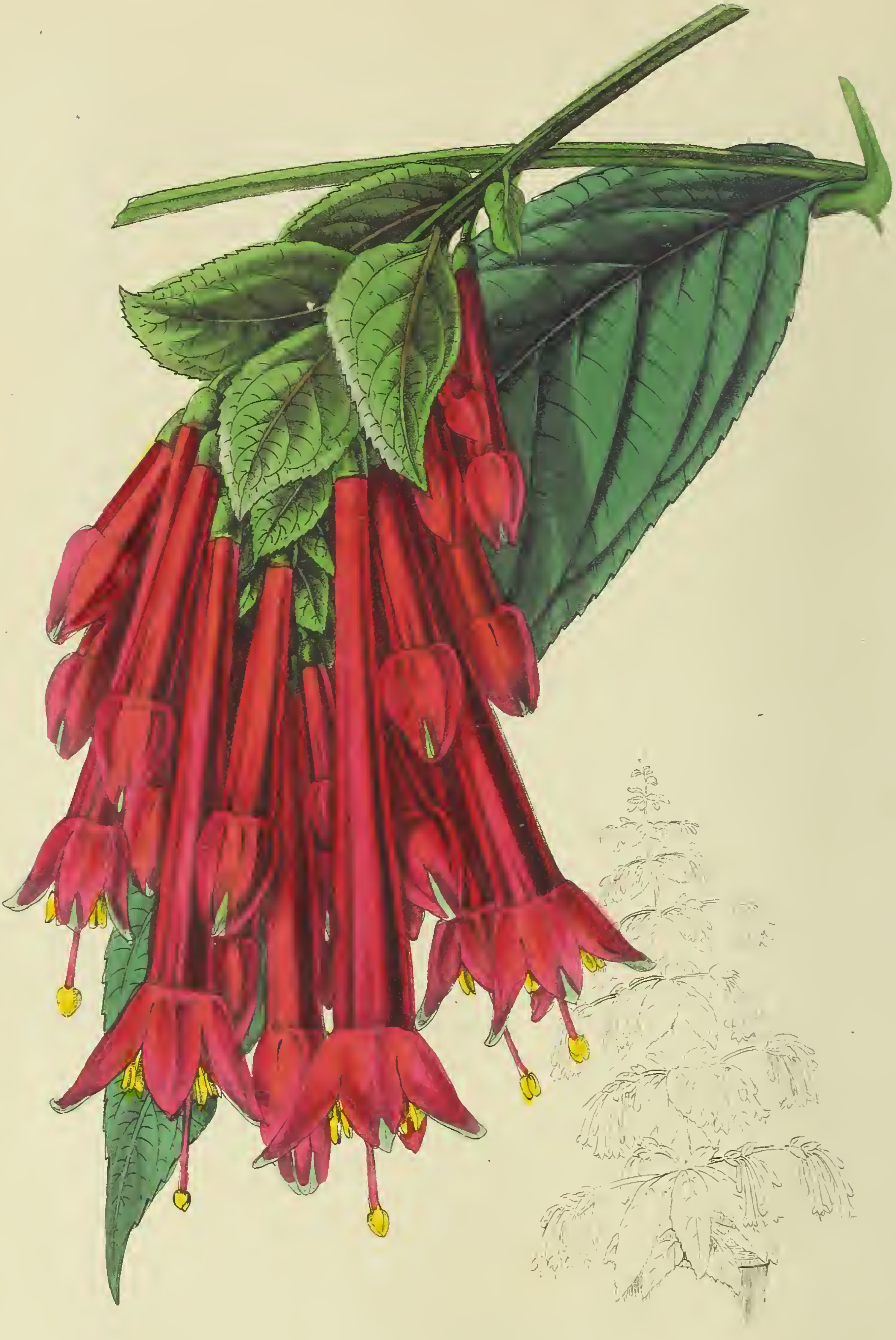
Those who have not yet furnished all their flower-beds, would do well to look about for as many varieties as may be met with, and endeavour in the next season to originate some others. They are raised from seed as easily as the herbaceous kinds, and symptoms of their regaining a place among fashionable flowers are now so unequivocally apparent, that it is time the commercial growers began again to collect and cultivate them. J. K.

CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS. JUNE.

Fruit Garden. Go over all grafted plants, and remove the suckers; thin, regulate, and tie up the young shoots from the scions, according to the object in view, being careful to remove all bandages before they become too tight, so as to interfere with the circulation of the sap. Towards the end of the month, peaches, nectarines, and other stone-fruits may be budded, but, unless a great number are wanted, this operation may be left until next month. Give a final thinning to the fruit of apricots and cherries, where necessary, thinning and laying in the young wood at the same time; net the latter from birds as they begin to ripen. Thin out the weak shoots from currants and gooseberies, especially from the centre of the bushes, so as to encourage a free circulation of air among the branches; also, deprive the plants of suckers. Keep the roots of figs cool, in dry hot weather, by copious waterings, and also by mulching; the same with recently transplanted trees of all sorts. Thin and lay in the young wood of peaches and nectarines, being careful not to crowd the shoots so as to bunch the leaves up together; every leaf ought to be freely exposed to light and air. Nail in young wood of pears, where wanted, and break over the foreright shoots, removing entirely such as are misplaced; thin the fruit. Continue to peg down strawberry runners, keeping the plants clear of all not so reserved; water copiously in dry weather. Keep vines thin of laterals and all superfluous wood. Syringe and water generally, according to the state of the weather, and the requirements of the different crops; and maintain constant war against all insects and other enemies.

Forcing Garden. Maintain a temperature similar to that advised last month about the cucumbers and melons, but giving little or no water to such of the latter as are ripening their fruit; thin and regulate the shoots and fruit of later crops, and maintain a moist atmosphere about them, but giving air freely at all times. Give very little or no water to ripening pines; shift any of the growing plants as they require it, keeping them close and shaded for some time afterwards, supplying them more freely with water when they begin to grow, and giving plenty of air to them; shade always in bright sunshine. Give air freely to the ripening peaches and nectarines, but limit the supply of water as they approach perfection; keep the swelling fruit in a moist but airy condition, and destroy insects as soon as they appear. The early vines, whose fruit is ripe or ripening, should also be kept dry and airy; the late ones in a moist but airy house, with a day temperature about 80°, allowing it to sink about 20 degrees by night.

D. M.



Alfred Adlard sc

FUCHSIA DEPENDENS.

Published by Groombridge & Sons, Paternoster Row London.

THE FUCHSIA.

WITH AN ILLUSTRATION OF F. DEPENDENS.

THIS very beautiful new member of the popular genus Fuchsia, is one of the many fine things introduced through the enterprise of Messrs. Veitch and Son, and the labours of their indefatigable collector, Mr. W. Lobb. It is a Peruvian species, remarkable for the number and rich colour of its flowers, and also for their disposition on the plant; from the erect main stem the branches proceed in a horizontal position, in opposite pairs, or occasionally in whorls of three, four, or more, each one starting from the axil of a large, bright green, ovate, acute leaf, and terminating in a dense corymb of flowers, which, in size and colour, remind one of *F. corymbiflora;* the corolla is absent, and the broad spreading sepals are tipped with bright green; owing to the regular divergence of the branches, the flowers hang gracefully on all sides of the plants, and by reason of the difference in length of the lower and upper or younger branches, a pyramidal outline is assumed, which of all others is best calculated to show the flowers to most advantage. A very accurate idea may be gained of the appearance of the entire plant from the sketch which occupies part of the plate. It must be mentioned, this pleasing regularity of form is not due to any art in the cultivation, but is the natural aspect of every plant grown with a single stem; and, from the happy conspicuity thus given to the blossoms, we opine the species is likely to become a great favorite. The only other kind possessing flowers of equal size and magnificence (*F. corymbiflora*) is disfigured by its straggling habit and naked stems; here, however, we have all its beauty collected in a neat form, the centre of the plant filled with ample reclining foliage, over which the brilliant masses of flowers fall in rich profusion: the special name *dependens* is very appropriate, for branches, leaves, and flowers are all gracefully pendent, not so much as to give a weeping character to the plant, but sufficient to allow the succeeding tier to be seen unconnected and distinct from the preceding.

In its cultivation, there is no peculiarity, we believe, to mark the present from any previous species; like them, it will require to be grown in light rich mould, a moderately warm and moist atmosphere while in an active state, and to be allowed a drier and cooler air to display its flowers. Doubtless the most handsome plants will be produced from cuttings, because the single stem will permit a more perfect development of its natural habit, and such specimens will, of course, be better clothed with foliage near to the pot, than older ones having a length of two years' old wood. We should say, to strike the cuttings in autumn, and keep them through the winter in small pots, on a warm shelf in the greenhouse; to put them into large pots in spring, and set them growing in a warm pit, or at the cooler end of the stove, will be most conducive to the production of really fine specimens.

The published species of the genus introduced to this country amount to nearly thirty; the following table contains a brief description of them, the country they inhabit, and the date of introduction.

Alpestris, crimson—Brazil, 1841.
Apetela, purple—Chili, 1824.
Arborescens, rose—Mexico, 1823.
Bacillaris, rose—Mexico, 1824.
Coccinea, scarlet—Chili, 1788.
Cordifolia, crimson, orange, green—Guatemala, 1841.
Corymbiflora, crimson, purple—Peru, 1842.
Conica, scarlet, purple—Chili, 1825.
Cylindracea, red, green—Mexico, 1836.
Dependens, crimson, green—Peru, 1846.
Discolor, red, purple—Falkland Isles, 1830.
Excorticata, green, purple—New Zealand, 1821.
Fulgens, scarlet—Mexico, 1835.
Gracilis, scarlet—Mexico, 1822.
Lyciodes, red—Chili, 1796.
Macrostemma, scarlet—Chili, 1823.
Microphylla, red—Mexico, 1827.
Parviflora, red—Mexico, 1824.
Radicans, crimson, purple—Brazil, 1840.
Serratifolia, crimson, scarlet—Brazil, 1843.
Spectabilis, scarlet—Peru, 1848.

Splendens, green, scarlet—Peru, 1842.
Tenella, scarlet, purple—Chili, 1824.
Thymifolia, red,—Mexico, 1825.
Triphylla, crimson—Pinchinchia, 1842.
Venusta, purple,—Mexico, 1825.
Virgata, scarlet, purple—Mexico, 1825.

SUMMER PRUNING WALL TREES.

I AM led to offer some remarks on this subject, by the effects of the last month of extremely hot weather upon the fruit of trees against walls. In the course of some rambles among my gardening friends, I have observed many cases in which the tender green fruit of peaches and nectarines are so scorched, as to preclude the slightest hope of their ever attaining perfection; the epidermis is marked with circular patches of an ashy paleness, where the direct rays of the sun have acted upon it, and on examination, all these places are found to be dead, the vessels of the skin are contracted and hardened, in precisely the manner that would result from the application of fire; and wherever a paucity of foliage admitted the power of the sun more directly, and in greater excess, there the fruit was most injured.

It is well known to all who have had occasion to give their attention to this subject, that through the greater part of May the weather was so exceeding hot and dry, as to prevent or stagnate the growth of most out-of-door vegetation, and among other things, the development of leaves upon wall-trees was very much retarded; and in many places, the utmost care could not prevail against the spread of insects; green and dolphin flies curled and crippled them so much, that their functions were only partially performed, their small size and scanty number afforded but little protection to the tender fruit from extremes of any kind, and the almost tropical fervour which marked the greater part of the month, acting upon their crude juices, may be regarded without doubt as the cause of the appearance spoken of.

I have hitherto been an urgent advocate of early thinning upon walls, but the experience of this season, will in future make me hesitate till some idea may be gathered of the weather we are likely to have between the period of the first setting and its full growth. The notion that sun-light is necessary to the growth of such fruits seems to require modifying, and it is now quite evident to me, that we may err equally on one side as the other. I must not be understood as opposed to judicious thinning even before midsummer; it must ever be better to take away the superfluous shoots while yet small, than to leave them to rob the other portions of the tree, merely to be cut away when larger; that which appears to me the best course, in the event of such a spring as that we have just passed through, will be to remove such growths as are not likely to be wanted in the ultimate arrangement of the tree, in a gradual manner, going over them at three or four different times, so that no appreciable alteration may be made in the amount of shade, and for the future I do not intend to begin nailing in the branches till the end of June. It is possible to conceive situations over which the wind sweeps with a violence that would be destructive to the new wood, if left so long as just proposed; but where the trees are sheltered, I am convinced the shade afforded by the spreading shoots is of great assistance to the fruit, hastening its development, and up till the time the ripening process commences, most essential in attaining the superior size so much desired. The worst cases of "burning" that came under my notice, was where the trees are growing on a poor, gravelly soil, making in the best seasons but very weakly shoots, and this year, from want of moisture, scarce any wood at all; a great quantity of fruit is annually produced by these trees, as may be expected from the thorough ripening they get on their well-drained borders, though but little of it ever attains a respectable size, and this season it was really pitiable to see nearly the whole crop mottled with the white blister-spots before described; while in other places, where the trees stand in moist alluvial soil, and make an abundance of large foliage, very few cases occur: this is convincing that shade is necessary, and on the hint thus derived from Nature's own book, I intend in other seasons to proceed.

HORTULANUS.

[Besides the accidental injury resulting to fruit from the absence of foliage, mentioned by our correspondent above, we would also direct attention to the constitutional dependence of the former upon the latter, under all circumstances. Fruits of all kinds possess an organization which enables them to draw nutrition from the surrounding parts of the plants on which they grow, but the greater part of this food requires to be duly and properly prepared, before it enters the tissue of the fruit; and this function is performed by the leaves alone; and when from any cause they are so far distant, or by disease are incapable of supplying it, the fruit dwindles and dies, a familiar instance of which is found in peaches produced on branches destitute of leaves. The perfection of a fruit undoubtedly depends on the amount of proper food it receives, and as this is derived from the leaves, it follows that the presence of healthy foliage in its immediate vicinity is essential to its existence, and more especially in the earlier stages of its progress, when, from the accumulations constantly going on, a large proportion of aliment is required. It is, however, to be thought of, the secretions of a fruit undergo a great change as it progresses to maturity, especially in those of a succulent nature: the immediate cause of which is heat and light; through their agency sugar is formed, and hence the sweet flavour for which most fruits are esteemed. By this theory we should preserve the leaves, as far as may be consistent with a regard to the proper distribution of sap among all parts of the tree, while the fruit continues in a growing state, thinning them only when the ripening process begins; a matter worth the consideration of those who are about to dress their vines upon open walls.]

THE CULTURE OF BRITISH FERNS.

The impulse given to the adoption of these elegant plants by the prizes offered at the metropolitan exhibitions, has already had the effect to set many persons earnestly at work collecting and cultivating them; the practice of one who has had them in charge for a long period may consequently be useful just now, and is offered the more readily, from a recollection of the many ineffectual attempts to grow some of the rarer kinds in the earlier days of my experience. Many who begin the pursuit, imagine no art, or any particular degree of attention, to be necessary with plants that thrive in our hedge-rows, upon bleak unpromising uplands, or on the margins of moor and morass; they soon find, however, that their ideas in this respect are erroneous, and that a knowledge of the habits, together with considerable care, is necessary, to have the fronds perfect, and the fructification well developed.

I am not now about to speak of the charm which may be imparted to rural scenes through the aid of this family, the finish that may be given to sequestered retreats, waterfalls, or other natural objects coming within the gardener's sphere of action, by their introduction, but of their management when grown in pots, a situation which must be acknowledged the most unnatural and inappropriate that can be imagined for them, and one in which nothing but the utmost perfection of growth can render them tolerable.

The first requisite is a supply of good peat: the staple of this should be formed of decayed vegetable matter, for though ferns may be found inhabiting spots where the soil is of quite a different character, few or none refuse to grow in this material, which, moreover, may be varied in quality by mixing loam or sand as it may seem necessary to suit the requirements of each species. Those derived from open moor or heath land generally thrive in very sandy soil, while those from the neighbourhood of rivulets require an unctuous, almost loamy earth, and others that are natives of marshes will be found to grow best when a proportion of moss is added to the peat; these particulars have to be determined by the nature of the localities the several kinds are known to affect, and on their variations the judgment of the cultivator is brought into play. Ferns are not fond of frequent shifting, we should therefore allow them sufficient root-room to carry them at least through one season; but, on the other hand, as they do not make a particular abundance of roots, and those which are formed, in the majority of species, are very small, we must not over-pot them; a twelve-inch pot will accommodate what may be considered a fine specimen of nearly all the British ferns, excepting only a few of the largest, as *Osmunda regalis*, &c. Very ample drainage is always essential; for though they delight in moisture, and only thrive in damp shady places, in cultivation the escape of superfluous water is most important. I would advise that pieces of crocks, roots, stones, and such things, be mixed with the soil, for around articles of the kind the roots of the fern multiply and cling with tenacity; the crown of the plant should be kept just level with the rim of the pot, and the soil pressed down half an inch round the circumference, leaving the centre a little higher. The most proper time for repotting is early in spring, before the plants begin to grow, and at that time the decayed portion of the rhizoma and all dead roots and the remains of last year's fronds should be cut away, and if increase is desired, this is also the best opportunity for the purpose. Propagation of these plants can only be effected by division, but it is generally easy with most species, as established plants form several heads or growing points, and each of these may be separated and treated as a distinct plant. Most of the species begin to grow about the end of April, and from that time onward through the summer they must be regularly attended. For the first month they are benefited by being allowed to receive the full influence of the sun, except May prove more than ordinarily hot, when shading must be resorted to in the middle of the day; under this treatment the fronds rise quickly, and being moderately watered every day with occasional syringing, they reach a great size, and by their tender green and rapid development, are very interesting. If designed for exhibition, they ought to be grown in a cold pit, in order to preserve the foliage from injury, to which in its young state it is very liable from heavy winds, and other accidental causes; if the accommodation mentioned can be afforded them, care must be had, at the same time, to allow plenty of air, lest they become drawn, and in such a position the syringe must be more frequently employed, not only on the plants, but also to moisten the floor and walls. About midsummer, the plants should be stationed in a shaded spot in the open air, and the more sheltered the place is from winds, the better for the plants; an awning of thin canvass overhead, leaving the bottom open except on the windward side, and the frequent application of water to the ground on which they stand will be of much assistance in keeping a moist atmosphere about them; or the neighbourhood of a stream of water, where they may be shaded by trees, is an appropriate summer station, if it can be had, and in such a situation, with the assistance of the awning before mentioned, all but the most tender kinds may be grown with success. Exceptions, however, will be found in such as *Hymenophyllum, Trichomanes,* &c., which, from their delicate organization, require more nursing ; they will not bear the ordinary fluctuations of the atmosphere when in cultivation, and it is then necessary to cover them with glasses. The beautiful *Cryptogramma crispa* requires to be thus managed, and if potted in half-rotten sphagnum and peat, grows with rapidity ; species of this description may be stationed in front of the larger kinds, and when shadowed by the broad fronds of a *Polypodium* or *Lastrea,* and supplied with a close humid atmosphere by means of the glass, are as well situated as we can devise ; much care, however, is necessary to preserve them in health and secure a full development, and it will be well to remove the glasses occasionally as the season advances, that the new parts may have an opportunity in a somewhat drier air of attaining the requisite maturity. A good plan with all the larger kinds, is to cover the surface of the soil in which they grow with green moss or some lycopodium ; this adds to their beauty, and preserves the earth from drying too quickly. Kept in the manner described, it will be found they do not require so much watering as many persons suppose necessary ; in fact, I would rather depend on an aqueous atmosphere, than on the water poured into the soil, as I am convinced they imbibe a great proportion of their nourishment through the fronds,—by neglecting this point, many failures arise.

Their winter treatment is of the simplest kind, for with the exception of the small delicate kinds before mentioned, and such as resemble them in habit, the whole may be kept securely, if the pots are buried in leaves. In October, when the fronds have all died back, cut them down and stand the pots at the foot of a north wall, taking the precaution to lay a thick bed of loose cinders for the pots to stand on, and throw over the whole dry leaves to a depth of nearly a foot ; here they will remain dormant till the succeeding spring, when they may be brought out, and treated as before recommended ; the tender kinds are best kept through the winter in the greenhouse or a good pit, a dry and airy situation being then necessary.

There are are about forty species besides varieties, natives of

Great Britain and Ireland, and in the following list of them I have separated the scarce kinds from those which are more common, that cultivators may have a better idea of the value of those they possess, and a guide to their future additions.

RARE SPECIES.

- Asplenium viride*
  - lanceolata
  - septentrionale
- Aspidium Lonchitis
- Athyrium molle
- Ceterach officinarum
- Cryptogramma crispa*
- Cystopteris alpina*
  - montana*
- Hymenophyllum Wilsoni*
  - Tunbridgense*
- Lastrea Thelypteris
  - cristata
  - rigida*
  - spinosa*
- Polypodium Phegopteris
  - calcareum
- Trichomanes speciosum*
- Woodsia ilvensis
  - α intermedia
  - β hyperborea.

COMMON SPECIES.

- Adiantum Capillus-Veneris*
- Asplenium Trichomanes
  - Adiantum-nigrum
  - Ruta-muraria*
  - α alternifolium*
  - marinum
- Aspidium aculeatum
  - α angulare
  - lobatum
  - α lonchitidoides
- Athyrium Filix fœmina
  - rhæticum
- Blechnum boreale
- Botrychium Lunaria*
- Cystopteris fragilis
  - α angustata
  - β dentata
  - γ regia
- Lastrea Oreopteris
  - Filix-mas
  - dilatata
  - α dumetorum
  - β recurva
- Ophioglossum vulgatum
- Osmunda regalis
- Polipodium Dryopteris
  - vulgare
  - α cambricum
  - β serratum
- Pteris aquilina
- Scolopendrium vulgare*.

Those having an asterisk affixed are most suitable for culture in glass cases.

J. T. S.

SUCCESSIONAL BEDDING PLANTS.

As the principal concern of the flower gardener is to have every part of his charge well stocked with flowers throughout the summer and autumn, not merely in isolated patches, but at all times, and in every available portion, the importance of keeping a due succession soon forces itself on his attention, and a few brief hints as to how this may be accomplished, may be welcome to such of your readers as are engaged in the matter. It is but too frequently the case, while viewing that portion of the pleasure grounds laid out in beds for flowers, we see many perhaps full to overflowing, while others mar the general effect by their naked shabby appearance. The end of June is a most trying time for the gardener in this respect, such beds as have been filled with early spring-sown annuals have just then lost their attractions, while scarlet Geraniums, and most other bedding plants occupying the surrounding space, are in full bloom; this has led many to exclaim against the admission of annuals into beds at all; but I should be sorry to see them banished altogether, as many of them, judiciously employed, are adapted to make a very good appearance in such places before the more regular occupants come into bloom; what, for instance, forms a more compact, neat, and pleasing bed than *Nemophila insignis*, supplying for a time, a colour so much wanted? blue flowers being among the most difficult to obtain of the character suited to purposes of the kind, and where we may find a substitute for this I know not.

It is not my intention on this occasion to enumerate the annuals adapted to the flower garden, and I have merely mentioned the above, to instance the valuable assistance derivable from them, and propose rather to show how the beds they have filled may be rendered equally ornamental with those stocked by plants of a more enduring character. I find it is usual to turn out, in May, among the annuals then coming into bloom, Verbenas, and other similar plants, with a view to their filling the beds immediately the former are withdrawn; but this practice is seldom attended with success, for the annuals being at the time in the midst of their most active growth, soon smother the more recent plants, which, languishing for a time under the effects of transplanting, allow the others to get so much ahead, as to preclude any chance of recovering their position, they are consequently drawn up into a weakly growth, and when exposed by the removal of the annuals to the scorching influence of a midsummer's sun, take a long time to rally, and seldom or ever keep pace with the beds that surround them.

Another course pursued, with certainly a better chance of success, and if properly carried out, would unquestionably attain the desired end, is to reserve a sufficient number from the original stock, to fill these beds at a later period; but too often they are kept in small pots, and soon exhaust their supply of nourishment, from the very small quantity of soil allotted them, and are only kept alive by frequent watering; such plants become indurated to a degree that they likewise require a long time ere they recover sufficiently to fill a bed well; the plants in the adjoining beds have had so considerable a start, that a difference is always observable between the early and late planted groups. What I would urge is, the advantage to be gained from encouraging the reserve while yet in pots, between the periods of the first turning out, and their own final removal; if a few of the free-growing sorts of Verbenas, Geraniums, or whatever else is most wanted, were then shifted into 32s or 24s, the branches pegged down, and the leading buds taken out to prevent them blooming, by the middle of June six such plants would do more in furnishing a bed, than three times their number of stunted ones, neither do they occasion so much trouble in watering; one good shifting, such as that described, the main branches to be pegged down at the time, and the constant removal of flower-heads, will ensure handsome vigorous plants, very little inferior to those which have passed the time in the open borders. Verbenas with a habit like that of Beauté suprême, Delight, Emma, Josephine, and other strong-growing kinds, are decidedly improved by the treatment: they are made dwarfer, and when the extra stimulus of the border is afforded their roots, their progress is astonishing; there is a good foundation formed by the frequent stopping necessary to prevent blooming, and the number of branches, and, as a natural consequence, flower-heads also, that are thrown up immediately the roots become settled in the ground, is most gratifying. Many other plants may be treated in the same manner with equal success, as Ageratum, Heliotropes, Cuphea platycentra (which has the best appearance when raised to the eye, by growing it in a vase or basket): the dwarf Lobelias may be thus vastly improved, Calceolarias, or in fact nearly all the plants usually required for the purpose; and if, after repotting, they are plunged in old tan or ashes, in a slightly shaded spot, scarcely any further care will be necessary. Water will not be required more than once a week, and a store of good plants will be at hand whenever they may be wanted.

Bromley. J. S.

ANEMONE JAPONICA.

For this introduction we are indebted to Mr. Fortune's researches in China, and if not one of the most showy plants of that country, it is at least a very useful one to the conservatory gardener; its habits of blooming in mid-winter rendering it highly valuable for decorative purposes, at a season when the production of flowers is most desirable, and attended with the greatest trouble. This plant, however, differs from most others which can be induced to bloom in winter, for it occasions literally no trouble, growing and flowering with the greatest freedom, under the most ordinary treatment. It appears to grow best in a mixture of leaf-mould and loam, and established plants throw up a great number of suckers or offsets: these should be separated in the early part of the season, and if potted separately, and grown in the open air through the summer, will form blooming plants by the winter. Placed on a light shelf in the greenhouse about the beginning of October, and moderately supplied with water, they will begin to produce flower-stems in December, and continue them throughout the spring months. The colour of the flowers is purple, and they are of long continuance, not only by succession but individually also. The ease with which it may be propagated and grown will soon render it common, and our greenhouses will thus be furnished with another attraction at a time when their interest most requires support. T. S.

DESCRIPTIVE LIST OF NEW PLANTS.

ONAGRARIEÆ.—*Octandria Monogynia.*

Fuchsia spectabilis (Hooker). From the collection of Messrs. Veitch and Sons, Exeter, who gratified the members of the Horticultural Society by the exhibition of it at their rooms in Regent Street, April 18th, 1848, when the large silver medal of the Society was awarded to it. It was then stated to be the *Fuchsia loxensis* of Humboldt, and one of the handsomest Fuchsias yet in cultivation; its dark green leaves and large brilliant scarlet flowers, with which the white-lobed stigma nicely contrasts, rendering it extremely attractive; to this character of its beauty may be added the blood-red colour of the flowering branches, and rich purple of the under sides of the leaves, contrasted with the almost velvety rich green of their surface. I have only to dissent from its being considered the *F. loxensis* of Humboldt, whose figure (Gen. et Sp. Pl. vol. iv, p. 536) is certainly at variance with our plant, as is the *F. loxensis*, Benth., in 'Plantæ Hartwegianæ,' n. 733. The form and size of the leaves, and the size of the flowers, and, above all, of the stigma, are strikingly different in the two, and the present is assuredly a most distinct and undescribed species. It is not indeed entirely unknown to me, for I possess specimens of it in a collection sent by Mr. Seemann, of H.M.S. Herald, gathered in September, 1847, at "Pambo de Yeerba buena El Equador." Mr. Veitch's plant from Mr. Lobb is probably from the same country, though the "Mountains of Peru" are given as the station. Mr. Lobb himself spoke of it in his letter to Mr. Veitch as the "loveliest of the lovely, found in shady woods, and growing from two to four feet high." The flowers are produced singly from the axils of the upper leaves; the calyx tube is about four inches long, bright red, swollen at the base; the limb is of four spreading, ovate, acuminate segments, tipped with green; the petals are large, deep purplish-red, nearly orbicular, waved, very patent, and pressed as it were upon the segments of the calyx, than which they are shorter. The style is terminated by a remarkably large four-lobed stigma, rendered white or yellowish by the copious pollen.—*Bot. Mag.* 4375.

EUPHORBIACEÆ.—*Monœcia Monadelphia.*

Jatropha podagrica (Hooker). A very remarkable new Jatropha from Santa Martha, New Grenada, with a singularly distorted stem and branches; much swollen at their bases, pale greenish-brown; the main trunk and old branches marked with the almost obliterated scars of the fallen leaves, the younger portion of the branches of the plant showing the much larger scars of recently shed leaves, rendered more conspicuous by the persistent, fimbriated, and glandular stipules, one on each side of the large scar. The cyme of flowers is large, and of a rich orange scarlet. It flowers at almost all seasons of the year.—*Bot. Mag.* 4376.

SAXIFRAGEÆ.—*Hexandria Digynia.*

Anopterus glandulosus (Labill). A truly handsome evergreen shrub, native of Van Diemen's Land, and introduced to the Royal Gardens of Kew, by Ronald Gunn, Esq. We have hitherto treated it as a greenhouse plant; but in the milder parts of England, near the coast, it would, in all probability, bear the open air all the year round, perhaps, even about London, if trained to a wall having a good aspect. Its season of flowering (winter) would be unfavorable to the blossoming in such a situation; but the fine dark green foliage, not much unlike that of *Photinia serrulata,* is at all times a recommendation. The racemes of flowers are axillary, at first covered with large membranous, coloured deciduous bracts; pedicles single flowered, an inch and more long; calyx deeply six-partite; corolla of six erecto-patent, concave, nearly orbicular petals, rather large, white, tinged with rose colour.—*Bot. Mag.* 4377.

ACANTHACEÆ.—*Diandria Monogynia.*

Thyracanthus Strictus (Nees). Syn. *T. Lemairianus, Eranthemum coccineum, Aphelandra longiscapa, Salpixantha coccinea, Justicia longiracemosa.* Having received this really handsome stove plant from the Continent, from different cultivators, under the garden names above quoted, and these being given as synonymes to Nees ab Esenbeck's *T. Lemairianus,* we cannot doubt it is that plant of which the native country is said to be unknown. We are equally certain that it is the *T. strictus* of the learned Professor; because the authentic specimen for that plant is in our Herbarium, having been sent from Honduras by Mr. Armstrong, and the two are identical. It is a half-shrubby plant, of strict habit, two and a half to three feet high; with opposite leaves, a span or more long, oblong, much acuminated, below decurrent into a short foot-stalk; the branches elongate into a raceme, a foot to a foot and a half long, four-sided; pedicles on pseudo-whorls; calyx destitute of bracteæ, purplish red; corolla rich scarlet, tubular approaching to funnel-shaped; limb of four equal spreading segments, which are ovate, obtuse, the upper one bifid.—*Bot. Mag.* 4378.

MYRSINACEÆ.—*Pentandria Monogynia.*

Corynocarpus lævigata (Forster). A native of New Zealand, drawn from a specimen sent by the late Mrs. Sherbourne, from her collection at Hurst House, Lancashire, and the only one we have seen; so that in the absence of fruit, we can only speak, as Mr. Cunningham and others have done, doubtfully, as to its place in the natural system. The position of the seed alone would militate against its being one of the *Myrsinaceæ*, and there is something in the structure of its flowers bearing an affinity very different from that family. Although the blossoms have little to recommend them (being small and green), the plant itself "forms a tree," says Mr. Cunningham, "Karaka of the natives, upon which the eye of the traveller rests with pleasure, by reason of its rich, dark green, glossy leaves, and highly ornamental growth; and it furnishes a plum-like fruit, of which the drupaceous coat, when fully ripe of a sweetish taste, is eaten by the natives." The nut or kernel also, upon being deprived (by steaming and maceration in salt water) of the poisonous property it is said to possess, is held in considerable esteem by the New Zealanders, who collect and use it for food in seasons of dearth. If eaten without this necessary preparation, the person becomes seized with severe spasmodic pains and convulsions, from which, in some cases, the sufferer does not recover, but has been observed to die in great agony in a few hours. The timber is not used for any other purpose than as fire-wood, being of short fibre, and very soft. It is a greenhouse plant, and flowers in May.—*Bot. Mag.* 4379.

GESNERIACEÆ.—*Didynamia Angiospermia.*

Gesneria Libanensis (Morren). It is much to be regretted that neither Martius nor Descaisne has carried out his views of the genera of *Gesneriaceæ* in a sufficiently comprehensive manner. Recent discoveries in South America have brought to light a great number of species, of which many are new, others ill-described, and all want a thorough investigation. The present plant is a native of Cuba, and was received at the Royal Gardens of Kew from Mr. Van Houtte, under the name of *Rytidophyllum floribundum;* but neither coincides with that genus in character nor in habit. It appears from Walpers, that it was previously described by Morren under the name here adopted; but it ill agrees with true *Gesneria,* rather with certain West Indian species in our Herbaria (*G. scabia,* Sw., and *G. humilis* and *acaulis,* Linn.), which are referred to *Conradia* by Martius and De Candolle, though probably without sufficient examination. No family deserves a more thorough revision than that to which our present plant belongs: the individuals of it are eminently beautiful, and the greater number well worth cultivation. The plant rises but a few inches high, with a simple or very slightly branched stem, clothed with spreading rosulate foliage, chiefly in the upper part. Petioles short, channelled, almost shaggy, with rufous hairs; the peduncles are axillary, rather longer than the petioles, single flowered, hairy, with long, narrow, linear bracteas at their base; calyx hairy; the tube wholly adnate with the ovary, turbinate; the limb of five ovate, somewhat leafy, acute segments; corolla half as long as the leaves, tubular, swollen in the middle, hairy, bright red, the extremity a little decurved, the mouth oblique; the limb of five small spreading, nearly equal, rounded, ciliated lobes.—*Bot. Mag.* 4380.

Conradia floribunda (Martius). As though to prove the justness of the above remarks of Sir W. J. Hooker, we are presented in Paxton's 'Magazine of Botany' with what appears to be the identical plant in question, under the name of *Conradia floribunda,* there described as recently introduced from the West Indies. It appears to be a peculiarly neat, little, free-blooming, stove plant, as "specimens two inches high, and four inches in diameter, have upwards of a dozen flowers expanded at one time, and the period of blooming is also of long continuance."

It requires the temperature of the stove, with much the same general treatment as the various species of *Gesnera :* namely, to be potted in light, rich, vegetable mould, or a mixture of loam, peat, and sand.—*Pax. Mag. Bot.*

ASTERACEÆ.— *Syngenesia Polygamia Superflua.*

Mutisia ilicifolia. This plant is a neat-growing evergreen, with hard leaves like those of the holly,a creeping habit, and is a free flowerer. The mid-rib of the leaf continues in the form of a long tendril, slightly downy whilst young, but becoming glabrous when old; the peduncles are axillary, bearing a single, large, showy flower: the ray of which is formed of ten female florets, each composed of a long, slender tube, two-lipped, the lower lip ligulate, of a beautiful purple colour, the inner one small, cut into two narrow revolute segments; florets of the disk, tubular, yellow, five parted at the apex.

Although its flowers are less showy than those of some other plants, yet being nearly hardy, of easy culture, forming a good evergreen cover against a wall, and not being liable to become naked at the bottom, are merits which ought not to be lost sight of. It is a native of Chili, whence it was introduced a few years ago by Messrs. Hugh Low and Son, of Clapton.—*Pax. Mag. Bot.*

SCARLET GERANIUMS.

I AM much pleased to observe the increasing attention given to these brilliant flowering plants, than which none can be more effective either in the flower-garden or cultivated in pots. It would certainly be an uncalled-for labour to enter into the detail of the management of such plants; but a brief comparison between some of the leading sorts may be useful to beginners, together with such hints as seem particularly worthy of notice, regarding their preparation for the several purposes they are adapted for. The soil of my garden is naturally strong, and of an adhesive character, but, being assisted by large quantities of vegetable mould, has become ameliorated, and is now, in my opinion, well calculated to bring out the several distinguishing traits of each kind; and, it must be remembered, it is from their appearance under such circumstances that I am about to describe them, by the names obtained with them from the nurseries; for, though as accurate and faithful as possible, a difference may be observable in some when grown under other treatment. In my practice with these plants, I have found, to have a display in the borders worth admiring, it is essential that well-grown and thoroughly established plants are turned out. The spring-cuttings of the same year are comparatively worthless; they do not arrive at a size to bloom well till the season is nearly passed; and, moreover, taking off the tops of the older plants to make cuttings throws the parents out of a blooming condition for a couple of months later. Propagation should be done in August, or the early part of September, so as to have them well-rooted in small pots before they are housed for the winter. On their management through the dull weather of the latter period depends in a very great measure the appearance they make in the first portion of the summer. To have them in good order they should be kept as dormant as possible, to induce which the use of water must be avoided, or no more given than will keep them from drooping. In a very dry, airy pit, my scarlet geraniums often stand a month without watering, and, though some of the lower leaves are lost by this management, I find the points of the shoots are preserved sound, which is certainly the most important thing, and mildew is very seldom troublesome. When the older plants are taken up from the borders in autumn, some folks cut down the stems to reduce them to a manageable size. This is a great error, for the wounded parts seldom or ever heal, but, becoming rotten, the disease runs down them, till it arrives at the root, and then the loss of the plant, or great part of it, frequently results.

Another mistake, occurring far too often, is to place the removed plants in some out-of-the-way position, as in the sheds or under the stage of the greenhouse, as though they were mere rubbish. If it is not worth while to attend them properly, it cannot be worth the trouble to take them up at all; and better far would it be to dig them into the borders than to cumber the erections with a lot of things that must, under this management, ultimately come to the rubbish heap. If scarlet geraniums are taken from the borders at all, they must be potted and carefully tended till re-established; to pay for the winter's nursing. A pit is the best place for them, and, in the removal, as many of the fibres should be preserved as possible, that the plants may have some organs of nutrition, which may be of service when first placed in pots. Means to excite these rootlets must be taken through the first fortnight, that they may get a hold of the new soil, and the plant reconciled to its new position. I would recommend them to be kept close and shaded for about that period, after which they may be gradually inured to the air, and, by removing decayed leaves, and allowing only a small supply of water, they will become properly dormant before it is necessary to shut them up much on account of the weather. Such plants being shifted and encouraged in spring, turn out large, healthy, and early blooming specimens, forming the most conspicuous of the summer occupants of the borders, and in the following autumn are truly magnificent. As regards the space they may occupy, I can only say, one such plant is more effective than a score of little stunted sickly things, as they become when neglected in winter, and much less trouble is entailed in the management.

[As an instance of what may be effected by careful treatment in winter, we may mention, half a dozen specimens of the variety General Tom Thumb, in the gardens of the Dowager Countess of Buckinghamshire, at Charlton, that, under the judicious management of Mr. Weeks, have attained an extraordinary size. They are grown in tubs, and, we should say (without actual measurement), are four feet in diameter, of a circular outline, and so dense, that last season it was found necessary to thin the foliage, to allow the flower-stems room to rise.]

Brilliant. A moderately strong-growing variety, with long footstalks to the foliage, and medium sized trusses of dark orange scarlet flowers.

Compacta. A dwarf habit, rather small foilage, marked with a dark zone or horse-shoe, moderate trusses of pale, dingy scarlet flowers, are the characteristics of this variety.

Comet. This is a strong grower with me, and throws fine trusses of pale orange scarlet blossoms.

Cottage Maid. Strong and erect in habit with ample bright green leaves, and noble trusses of brilliant colour, but scarcely high enough above the foliage.

Dandy. A pretty little, very dwarf and compact-growing sort with variegated foliage, well suited for edgings of the larger kinds.

Emperor. This kind is distinguished by its robust mode of growing, large velvety leaves, and splendid trusses of sixty or eighty flowers each, borne on long and strong footstalks boldly above the foliage; it is an excellent variety for the centre of large masses of scarlets.

Eclipse. Only distinguished from the above by a slightly depressed habit, and flowers of a shade deeper in colour.

Frogmore. Extensively grown, and esteemed for its moderate style of growing, and the copious production of its rather small trusses of vivid orange scarlet blossoms.

General Tom Thumb. The peculiar dwarf-spreading habit of the plant, its ample pale green, and almost smooth foliage, and the bright colour of its flowers, have made this variety a great favorite: it has a fault, however, which strikes even a common observer,—its flower-stems are thrown out in a straggling manner, and do not stand so erect as could be desired.

Greenlaw's Scarlet. Very similar to the *Frogmore,* but attains near a foot higher.

Huntsman. An excellent, compact, and moderately dwarf kind, with erect, good sized trusses, of bright orange scarlet flowers. The plant is not quite so dwarf as *Tom Thumb,* but has an advantage in its manner of blooming.

Honeymoon. A strong grower, with bold trusses of pale scarlet flowers, effective because a free-bloomer.

Ivery's Scarlet. Rather strong in habit, too much so to be classed with the dwarf kinds; has very dark green foliage, with a broad black horseshoe; very bold and large trusses of deep scarlet blossoms. The best of the zoned varieties.

King. Straggling in habit, and but a poor bloomer.

Lucia-rosea. With a somewhat stronger habit than *Frogmore:* this variety combines handsome trusses of pale rose-coloured flowers; it is a very distinct and pretty variety.

Manglesii. A variegated kind, having ample foliage broadly marked with bright silvery white; the flowers, as is the case with all of the class, are insignificant, and quite of secondary esteem.

Mrs. Mayler. This kind has a habit nearly as robust as that of *Emperor;* both foliage and flowers are, however, several shades paler, which sufficiently distinguishes it.

Prince of Wales. So far as I am yet able to judge, this variety fully bears out its character: of the habit my present acquaintance does not permit me to speak, but the few flowers yet produced have been very brilliant and well formed.

The Elms. S. TURNER.

FLORICULTURAL HINTS.

THE first thing to be done this month is the propagation of pinks. As a primary step, let a bed be prepared to receive the cuttings, choosing a warm sunny spot, where the soil is tolerably good; mix a quantity of clean sharp sand with it to encourage the formation of roots, and after thoroughly stirring it six inches deep, rake the surface level, and set the hand lights in their places. Some propagators recommend a place naturally shaded to strike on, but I very greatly prefer a warm position, as the process is carried on so much quicker, by reason of the heat imparted to the soil, which then acts upon the rootlets in the manner of a gentle hot-bed; and of course all necessary protection from the mid-day sun may be provided artificially, retaining for the benefit of the cuttings its beneficial influence in the morning and evening, the advantages of which are so great that in little more than half the time taken up in striking on a north aspect, better plants will be produced with a smaller proportion of failures. The medium sized shoots that have not produced laterals make the best plants, though upon a pinch the strongest of the latter are sometimes employed, a practice by no means commendable. Lateral growths never produce plants strong enough to bloom well, and are only to be valued as an additional means of obtaining stock in the succeeding year. A very sharp knife with a thin blade is essential to make the cuttings properly, for if at all bruised in the operation they die; take them about five or six joints long, and trim the foliage from the three lowest, cut the end straight through just below the joint, and insert it firmly in the soil without cutting the points of the leaves off, as is too frequently done; this old-fashioned error can only be continued through want of reflection; its only effect is to permit a great waste of the juices through the severed sap vessels, an evil that every other part of the process is intended to check, but which in this case are entirely overset by a mutilation devoid of a single redeeming qualification. As it would be tedious, as well as troublesome, to dibble each cutting as it is made into its place, a small pot of water should be at hand in which the pipings may be placed till a sufficient number are ready for planting. It should be remembered that much of the success depends upon doing it quickly, and therefore no time should be wasted between the removal from the parent and fixing the cuttings in their places under the glass. Previous to dibbling them in, the soil should be well soaked with water, and after the glass is filled a slight sprinkling will settle it closely round them.

By the middle of the month the spring planted Ranunculuses will be ready for taking up; they should be closely watched, and as soon as the foliage parts readily from the roots, they may be considered ripe; the often repeated advice to dry them in the shade must be thought of, for it is a ruinous practice to set them in the burning sun as soon as they are out of the ground, and not less injurious is the negligent custom of leaving them in the ground till next month; the plants, in the mean time, have begun to grow again, as is evident in the number of white silky fibres proceeding from the upper part of the claws, a waste of energy is occasioned which often continues for several years.

Pansey seed requires close attention in hot weather, the best seed is just now ripening, and as soon as the pods become mature, they split and scatter the seed; the plants should be looked over every evening, and those tinged ever so slightly with brown, should be gathered and placed to dry on papers where they are secure from accidents.

Begin to thin the shoots of Dahlias, the laterals proceeding from the base of the main stem are now soft, and may be easily removed with the thumb, which prevents much future trouble and does not disfigure the plant.

Carnations and Picotees are coming rapidly into bloom, the pods must be carefully attended, loosening the ties of such as require it, fastening them again higher or lower as may seem necessary ; such flowers as open only on one side should have the calyx slit equally all round, and others may be thinned by drawing out the confused petals ; as they advance, the guard or outer tier of petals should be arranged so as to allow each a fair chance of displaying itself, and those of the interior are then to be placed so as to imbricate one over the other ; a card drawn up the pod and secured in its place by means of a small wire hook, one end of which is thrust into the supporting stake is of much assistance, both in arranging and retaining the flowers in their proper form. In addition to the ordinary shading cloths or awning, it will be well now to fix one from end to end of frame inside, in the manner of a ceiling, the object being to catch any moisture which may penetrate the outer covering when it rains, the spray when dashing through being very likely to mark the flowers unless protected in this manner, or with cap glasses ; the extra cloth is a good substitute for the latter, and if of sufficient size of course guards the whole collection, it should be allowed to belly a little downwards over the path, and then whatever water is collected falls through where it can do no mischief. Remember the awning is only to keep off sun, wind, and rain ; air must be admitted whenever possible.

Florista.

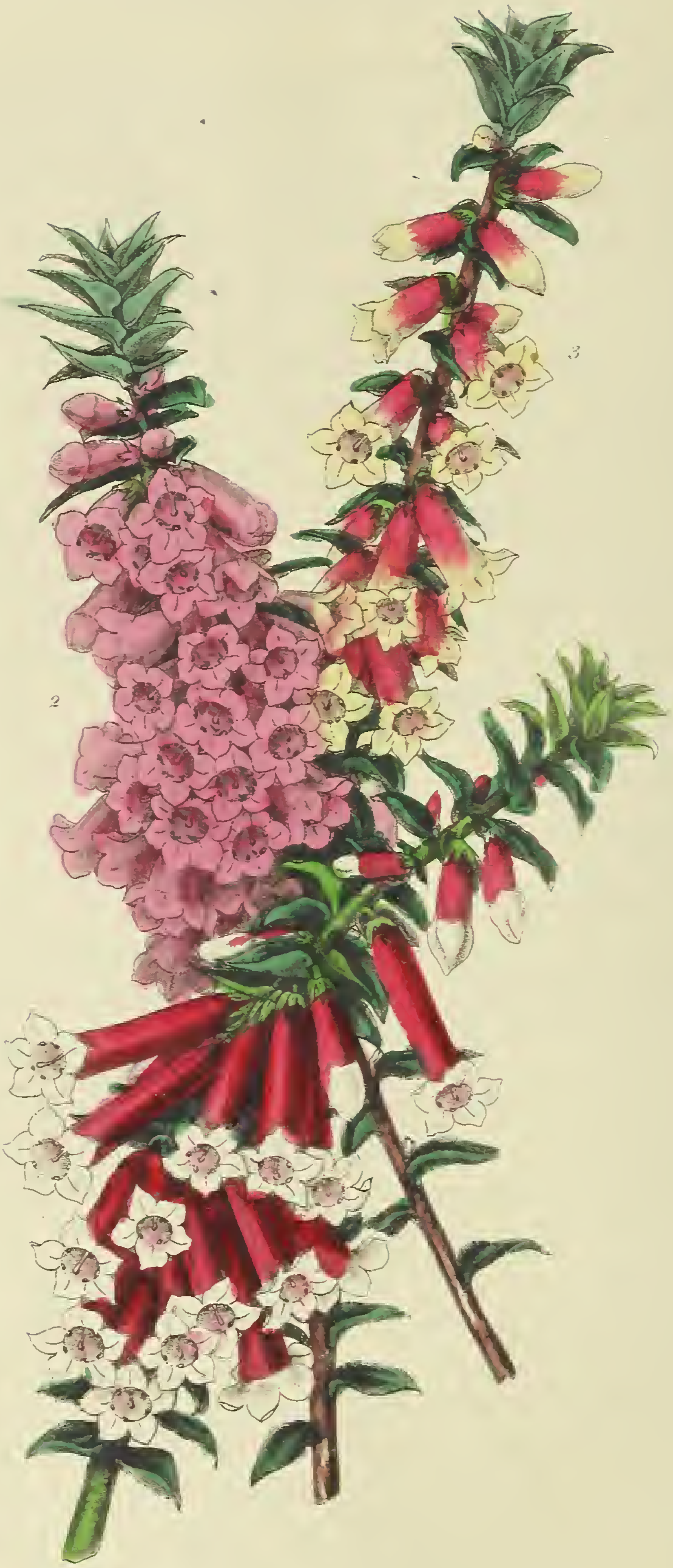
CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS. JULY.

Fruit Garden. Continue to attend regularly to all grafted plants, thinning and tieing up the shoots as they advance ; some of the forwardest and strongest growing sorts may be headed down to four or five eyes, and thus one year be saved in forming the head, as the lateral shoots will be ripened before the winter sets in. Peaches, nectarines, apricots, plums, and cherries should be budded early in the month, so as to get the young wood strong and well ripened by the autumn. Constantly attend to the thinning and laying in of the young wood of all the wall trees, so that the plants may not be crowded with useless wood, nor the fruit be too much shaded from the sun and air. Net, or otherwise protect from birds, wasps, and other enemies, all fruit as it approaches maturity. Propagate currants and gooseberries by taking the half ripened shoots with a heel, and trim off the lower leaves for four or five inches, leaving three or four perfect eyes and leaves at the top of the cutting. Insert them in rather rich sandy compost, in a moist shady spot (a north, or north-east border does well), and they will root and form strong plants in a short time. Thin out the weak and unnecessary roots from the raspberries, and tie those reserved free from the canes in fruit, so as to allow the latter the full benefit of light and air. Take off and shift the early strawberry runners, and plunge them in a sunny place, and water freely in dry weather. Lay more runners into pots, if enough are not done already.

Thin vines of laterals, and also the bunches of superfluous berries, if fine grapes are wanted. Keep trees which have been moved so lately as not to have reestablished themselves, well mulched and watered in dry weather; also wall and other trees where necessary, forking over the surface of the ground about the roots, and watering thoroughly so as to ensure a good soaking to the ground in their neighbourhood.

Forcing Garden. Continue the previous directions with regard to cucumbers and melons. Where the early plants of either are cut back to bear again, the plants should have the earth loosened about them, and also partially renewed, and they should then be strongly excited by the application of heat and moisture, being careful to admit air sufficient to prevent the shoots from drawing up weak. Shift the succession pine plants before the roots become at all matted in the pots, shade and syringe freely, allowing plenty of air when the temperature ranges from 85 to 90 degrees; withhold water gradually from the ripening fruit. The ripening peaches and nectarines must have plenty of air, and where the fruit are all gathered, the glass should be taken off and the plants fully exposed to the atmosphere. Also expose the plants in the vineries as the grapes are gathered, and give air freely to such as are ripening, gradually reducing the supply of water as well.

D. M.



EPACRIS

1 MINIATA 2 HYACINTHIFLORA 3 ATTLEEANA

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THE EPACRIS.

WITH AN ILLUSTRATION.

The beauty of this genus, and its value as an early-spring flowering group of greenhouse plants, have led to the repeated notice of it in horticultural works of all kinds ; and directions for its culture are multiplied to an almost indefinite extent. Notwithstanding this, the frequent addition of new varieties possessing peculiarities of their own, or the discoveries of modern culturists, causes another and another notice necessary in quick succession: but, like its congener the heath, there is ever some new beauty to admire, or an interesting account of improvement, either in character or management, to be recorded ; they are everybody's plants, who grow plants at all, and consequently everybody feels interested in them ; besides, there is the constantly recurring stream of young gardeners who have yet to learn the particulars of the pursuit they have chosen, either as a profession or amusement. All these considerations may well excuse from a charge of plagiarism, and therefore we venture again upon the routine necessary to grow the genus to perfection.

Good peat is the first essential ; and how to know it is often a difficulty with the beginner. Peat differs as much in quality as perhaps any earth we employ : that most suitable to the epacris is of medium character, partaking rather of a close adhesive nature, than of a light sandy kind, not that sand can be dispensed with, but as it is generally found that sandy peats are sterile in themselves, it is better to procure the naturally rich unctuous kind, and afterwards lighten it artificially by adding sand ; abundance of decayed vegetable matter is therefore the distinguishing feature of the peat required, and this should be cut from four to eight inches thick, according to its quality, and may be laid in a heap to be used as occasion requires.

The best time to buy epacrises, is when they are in bloom ; an exact idea is then obtained of their colours and habit of blooming : in addition to which we have them at hand to operate on at the exact period they should be set growing. The most promising plants to begin with, are those which flower for the first time, and occupy so as to fill three or four inch pots; there is no danger with plants of this kind of having them in a stunted condition; on the contrary, they may be expected to break vigorously, and as their roots extend, to throw up strong stems that are certain to flower abundantly in the following season.

The proper period for repotting is immediately the plants have done flowering: the decline of the blooms should be the signal to cut down all the branches to within an inch or two of their origin; and whether young plants or large specimens, the same course should be pursued;—it may seem a severe one at the time, but as it is the only pruning required, unless the plants are cut pretty close, they will ultimately become straggling and naked at bottom.

The old method of stopping the growing shoots is objectionable, because attended with considerable loss of flowers; the flowering principle is then diverted into so many channels by the multiplication of the branches, that instead of long and dense spikes of bloom, we have only scattered sprigs filled with flowers, and the general effect is materially injured. As the plants are cut down, they should be repotted, the small plants will be greatly benefited by a rather large shift, and those which have attained to a specimen size, should by no means be cramped for root-room. The soil should be prepared by rubbing up the peat before mentioned, breaking it into pieces with the hand, but on no account should it be sifted; all the smaller roots and stones should be retained, and if it is then found to be very light in texture, and of a pale brown from an excess of vegetable matter, a little loam may be added to consolidate it, and, to complete the compost, as much sand as will give to the entire mass a grayish colour, should be well mixed in. Ample drainage must be secured by placing in the bottom of each pot a layer of broken potsherds to a depth of about one sixth that of the pot, and other pieces may be mingled with the soil; keep the bottom of the plant's stem just level with the rim of the pot, and press the soil pretty firmly down with the hand, taking care to fill the spaces round the sides. Directly after repotting, the plants should be stationed for the summer in cold pits or frames, where, for a fortnight, they should be kept rather close and shaded, to induce them to commence their growth, but afterward the supply of air should be gradually increased to prevent them being drawn up weakly; water, of course, must be given regularly, and in quantities proportionate to the state of the weather, and condition of the plants. An occasional syringing will be found highly beneficial, but must not be indulged in to any great extent, or mildew will perhaps make its appearance.

By the middle of September, the seasonal action of the plants will decline; and, to complete their growths, it will be well to expose them completely to the sun for three weeks or a month, at the same time abstaining from the free use of water, closing them up at night and using every endeavour to ripen the shoots that have been made. Some time in October or the early part of the following month, they should be taken to the greenhouse, where a light, airy situation at the coolest end should be selected for them. Epacrises only require to be guarded from frost; and, with the coolest treatment compatible with that particular, generally succeed the best. Their treatment through the winter will, therefore, be that of a dormant plant; no more water should be given than is positively necessary to keep them from shrinking, and as much air as the external atmosphere will permit.

In the spring, when the flowers begin to expand, some little encouragement may be given, as to remove them from chilling draughts, and to supply them rather more liberally with water; still, the latter must be used cautiously, or some danger of the blossoms falling before they open will be incurred.

No particular mode of training can be recommended for these plants, or, rather, we should advise it to be altered according to the habit of each individual. Much difference exists in the length and vigour of their stems, and perhaps the easiest rule will be to train the long, weak-growing kinds upon wire cylinders, while the more robust may be left to grow erect. Whatever mode is adopted, the means should be kept as much out of sight as possible, as, however necessary sticks or frames may be, they should never be conspicuous.

The following selection would be a good one to begin with, and any of the number may be added with advantage where they are not already grown :—

Atleeana
Campanulata alba
,, grandiflora
Coccinea
Copelandica
Coruscans
Grandiflora
Hally's seedling white
Hyacinthiflora

Impressa
,, alba
,, nana
Miniata
Nivalis
Pulchella
Splendidum
Variabilis
Wilmoreana.

SUMMER TREATMENT OF ORCHIDS.

At this end of the blooming season, a cursory glance through the orchid houses will generally show the plants to have become strangely intermingled. A desire to place the most beautiful where they can be best enjoyed, or in such a position that the power of contrast may be made to heighten their beauty, will often lead to their being misplaced as regards their cultural management; and now that the principal portion of the most valuable species have ceased flowering, it will be well to get them replaced and set growing.

This course is most essential with the Indian species, a class which, with proper convenience to grow them apart from the other portion of the collection, is most decidedly of the easiest management, but one in which beginners often fail, by attempting to cultivate them by the same routine as is fitting for the American class. The meagre appearance of many of the plants in small collections is, without doubt, attributable to this error. The endeavour to keep such an average temperature as will suit the whole, leads by opposite effects to the injury of both classes. To enable the Indian kinds to grow at all, it is necessary to have so much heat as is decidedly ruinous to those from Mexico and that part of the world, the major part of which may be very successfully grown in the warmest part of an ordinary greenhouse; or, if the latter are most esteemed, and the treatment made subservient to their health; the converse happens to the more tender kinds—they suffer from the starving effects of a low temperature. Those, then, who have a mixed collection, should lose no time in getting them settled in their respective places. The Indian species, to be grown to any perfection, must have a place devoted to them; and, if the establishment does not afford a house for each class, it would be far more judicious to exchange the minor one for others of the opposite character, than, by continuing their culture, incur the risk of spoiling both.

The seasonal shifting should also take place with such as have done flowering:—this leads to the consideration of the most suitable material to be used in the operation; the importance of which must be apparent to all concerned in their culture. Long experience has proved that moss should enter largely into the formation of the compost prepared for them; its open texture enables the roots to traverse the mass without obstruction, and remembering that naturally these roots take up no inconsiderable amount of their food in the form of thinly dissipated vapour, it is evident we should secure a very free passage for the atmosphere of the house through the compost; besides which the quick escape of superabundant moisture is also necessary, all these ends are answered by the free use of moss, let it then form the greater part of the mixture made for every species, and some of them, especially those requiring small baskets and blocks of wood, succeed best when moss only is employed. The kinds generally used are the sphagnum or water moss, and hypnum or green wood moss; the first has been most extensively used, but in my opinion is objectionable on more than one account: my experience goes to prove that sphagnum, when constantly wet, as in the growing season, is apt to turn sour, and on the other hand, in the resting season, it dries into hard impenetrable flakes, very difficult to moisten, and therefore irregular in its results. A repetition of these ills induced me to try the hypnum which subsequent trials has proved to be greatly superior. It will be readily acknowledged that any unwholesomeness in the food supplied must be highly detrimental to vegetable life, and also that a living medium for the roots is preferable to any other, because under such circumstances they are more naturally placed: these considerations were amply met in the hypnum; it may be kept continually growing with very little trouble and no injury to the plants, even in the most dormant period of their existence; and while in that state, of course there can be no danger of any unhealthy action: it imparts to the plant an agreeable amount of moisture, and so far as appearance is concerned, instead of detracting from the beauty of the orchids, as is the case with the disagreeable colour of the sphagnum, it certainly contributes no small share by its bright and pleasing freshness. The remaining points in the process of shifting are so extremely simple, that it is not necessary to insist on anything more than the necessity of securing an ample drainage, the importance of which cannot be too strongly impressed on the mind, for though orchids delight in an abundance of moisture at certain seasons, yet nothing is more fatal to them at any time than an accumulation of stagnant water, either in pots or baskets. It is advisable to place a thin piece of peat in the bottom of each basket, with the grass side downwards, this prevents in a great measure the escape of small particles of dirt, which, falling through the mixture in the baskets on to the plants beneath, often causes bad consequences, and are at least very unsightly.

It is a very good plan to stage all the plants that are showing flowers, as a good look out is then necessary to prevent the ravages of insects; the young flower spikes are a great temptation to these depredators, and unless well watched in their infancy, are often lost: but as soon as the flowers have decayed, such plants as grow in baskets should be again elevated to start them into a rapid growth. By suspending them in the highest part of the house an advantage is gained in the extra ten degrees of temperature always observable there, but great attention is required to keep them sufficiently moist. The daily range of temperature in this, the most active part of the growing season, may be stated to begin at 70°, the power of the sun advances it by 10 a.m. to 80 or 85°; the lights are opened and a thorough ventilation takes place, with air enough to remove all moisture hanging about, and indeed to dry the plants, which may be deemed highly essential once a day. At 5 p.m. the house is closed, the shading removed, and the plants well watered and syringed, after which the temperature rises rapidly for an hour or two, the thermometer often indicating 95 or 100°, but the great heat at this part of the day is unattended with any danger of burning the plants, and indeed serves to economise fire heat, as only a moderate supply of the latter is sufficient to keep the temperature of the house from sinking below the proper point by the morning. In addition to the syringing given in the evening, a regulated supply of steam is admitted to the plants all night by lifting the covers of the heating apparatus, and this is of much assistance in maintaining the due proportion between the moisture and heat of the place at all times.

It will be seen the erection spoken of is the house of Indian species, the plants to be suspended being such as Vanda, Saccolabium, Dendrobium, Coryanthes, &c.; and in the growth of such as these a very ample command of moisture as well as heat is requisite, not merely the evanescent moisture arising from the application of the syringe, but a steady continuous stream of aqueous vapour that shall continue for hours, or at all times if necessary, to pour itself in and mingle with the atmosphere of the erection. With the western species, or those coming from America, a difference of nearly one third both of heat and moisture should always be observed, they requiring so much less than the eastern kinds. It is barely possible, by a very careful selection of species, to grow both together in one house, if it be of considerable length; but then the probability of some being too hot while others are suffering from cold, would lead any who wish to grow their collection well, to place a partition between the plants of the two countries.

Stratford. H. PLANT.

THE HOLLYHOCK.

I AM greatly rejoiced to find this gay and varied ornament of our flower-borders again taking its place in the estimation of the public; the decline of the dahlia fancy arising from the complete satiety of its admirers, will afford an opportunity of bringing forward the hollyhock, which the cultivators of that flower should not neglect. Its pretensions to notice are by no means small, and with careful attention it is highly probable they may be greatly increased. In its present state we have no lack of variety, its colours are vivid or delicate, bold or diffused, in changes sufficiently numerous to meet the tastes of the most fastidious; while its characteristic stateliness distinguishes it from all other flowers of the autumn. It seems to me that no good reason has ever yet been offered against the hollyhock becoming an exhibition flower, and were inducements held out for its adoption, I think we should speedily witness a vast improvement; the single blooms, when shown in boxes, have a very good effect, or if it was thought desirable, limited portions of the spike might be brought to our meetings. The first and most considerable improvement to be effected in the flowers is to increase their substance; to remove their flimsiness, and impart a fleshy firmness would be to render them equal in beauty to any flower we possess; already we have hundreds of shades of colour, and flowers as double as can be wished, and with the additional stoutness in their component parts, nothing further seems desirable, unless, indeed, we were to set about dwarfing their stems, a matter desirable under some circumstances, as it would render them less liable to injury from wind, and perhaps make them more manageable in small gardens. To do all this will doubtless occupy many years, but as gardeners of the present day know both how to do it, and what has been effected by the same means, there can be no doubt of their accomplishing the task if once it is fairly taken in hand.

The cultivation of hollyhocks is one of the simplest operations in horticulture; the seed should be sown in April or May, on tolerably rich light earth, and through the summer they only require to be kept clear of weeds, till in August they will be large enough to transplant into nursery rows; a distance of eighteen square inches should be kept between the plants, and in these rows they remain to be proved. Early in the following spring it will benefit the plants to fork in a slight coating of dung, and by keeping the ground clear of weeds, the bloom-stems will have every opportunity of rising with strength, and when about three feet high they should be fastened to stout stakes; these supports never need be more than four feet long, as it may be remarked that the stems are seldom or ever injured but by being broken off close to the root, and if the lower part is held secure no danger need be apprehended to the upper portion. When coming into bloom, the seedlings should be examined frequently, and all single or semi-double varieties taken out, as they would only tend to spoil the seed of those left for the purpose.

The qualifications to be sought are—first, a moderate strength in the stem; second, such an arrangement of the flowers, as, that when they are fully expanded, they may meet round the stem and completely cover it. There should be no vacancies between them when full blown, and each flower should have a long and strong foot-stalk, so as to stand boldly forward; the individual flowers should be large, quite double, and those, having in addition to the other qualities, the thickest and most regularly-arranged petals, will be the best. Such as these will be worth propagating, and unless seed is desired of them, should be prepared accordingly; the saving of seed always tends to weaken a plant, and therefore those it is desired to increase should be cut down immediately their beauty declines. The only mode of propagating the approved varieties is by separation of the stool or crown of the plant, and that method is often attended with a difficulty on account of the paucity of roots. In October, when the young leaves of the crown have grown about a couple of inches, the roots may be taken up, and they will be found to have divided at the crown into two or more parts, each of these may be separated, taking care to secure a portion of the fibres to each piece to assist its progress through the winter. A bed of light rich earth in a warm position should be prepared for the slips, into which they should be inserted completely up to the neck, and in severe weather it is often necessary to protect them with a covering of litter, as in their wounded state they are very liable to injury from frost.

The use of this bedding through the winter, is to encourage the production of young roots from the crown, and to facilitate the covering when necessary; in the succeeding March they may be finally stationed as blooming plants, and in such position should have plenty of room allowed them on all sides. From their erect manner of growing, however, a less space is sufficient than would be required for dahlias, and thus we may collect in a given space, a greater variety of colours than could be had by the employment of the other family, a consideration of no small consequence in limited gardens, and, moreover, the hollyhock does not refuse to display its beauties in the most confined districts.

H. T.

CALYSTEGIA PUBESCENS.

Any addition to our hardy-flowering climbing plants, must ever possess considerable interest, and in this we have the rare combination of rapid growth, an abundant display of flowers, and very easy management. The original plant was introduced a couple or three years since from China by the Horticultural Society, through their collector Mr. Fortune; and from the amazing increase which may be effected through cuttings of the roots, it has already become plentiful among cultivators of such things. My first plants were obtained in the early part of the summer of 1847, and growing them on through the remainder of that season in pots trained to a trellis, and kept in the greenhouse, I had the pleasure of seeing them bloom tolerably abundant. In winter the stems died away, and the pots were kept in a shed till the following spring, when on shaking out the mould, I found an abundance of strong white stolons, or creeping roots, which all gave promise of making plants. These were separated and potted into a rather strong soil, composed chiefly of loam and leafmould; they were set to grow in a cold pit, and with ordinary attention had made from two to four strong shoots each by the end of April. Some were then shifted into large pots to be grown on wires as specimens, and the remainder, in about a fortnight, were transferred to the open ground, where, planted in a south border, they had an opportunity of being attached to some trellis; those in pots were continued in the greenhouse, and with an occasional syringing to keep down insects, which I found better than fumigating, they grew with much vigour; the others being placed out just as the hot weather of May began, experienced a considerable check during that period, but their after progress was of a nature to compensate for any loss of time; they grew with great vigour, and by the middle of June, had nearly caught their fellows in the greenhouse. At the present time both are growing and flowering finely. The individual blooms are rather ragged, or, at least, are very loose in the arrangement of their petals, but the colour is a delicate light rose, and being produced from the axil of every leaf, on the whole the plant is very effective. A good strong plant seems capable of thoroughly covering at least ten square feet of trellis in the open air, and from the annual character of the stems, and strength of the roots, it appears likely the plants may be trusted out altogether with no other protection than perhaps a mound of leaves to keep off frost: this will increase their usefulness, and soon secure for them the place they deserve.

Observer.

BRITISH ORCHIDEÆ.

This subject was named some time ago in several of your excellent Numbers, and some parties seemed anxious to know more about them. I certainly wonder they are not more grown, as *some* of them far surpass many of the imported ones, both in beauty and singularity. I have for many years been a grower of them, and find they amply repay me for the trouble. The management of these and several of the North American ones is so simple, that any one, who is possessed of a garden and frame, or shed, may grow them.

The following are what I principally cultivate:

Orchis bifolia—Butterfly orchis
,, pyramidalis—Pyramidal ditto
,, morio—Meadow ditto
,, mascula—Early ditto
,, ustulata—Dwarf ditto
,, militaris—Man ditto
Gymnadenia conopsia—Red-handed aromatic ditto
,, hircina satyrium hircinum—Lizard ditto
Neottia nidus-avis—Bird's nest ditto
Ophrys Muscifera—Fly ditto
,, Apifera—Bee ditto
Cypripedium calceolus
,, spectabilis } North American.
,, pubescens }
,, parviflorum }

Besides these, I grow about ten or twelve varieties, part of them collected in Scotland, and others in Cumberland, one of which, a tall-growing, large, crimson-purple flower, is exceedingly fine. I have also a very beautiful, delicate white one, found on the very damp parts of the moorland in this neighbourhood; and a delicate rose-coloured one from the same district. I have grown most of these in the open borders, but I prefer growing them in good-sized pots, as many of them have the utmost dislike to have their roots meddled with. I found that disturbing the border in spring often injured them. The first eleven grow well, and some of them increase considerably in size and beauty, if planted in good meadow-soil, pressed well about their roots, with a covering of about an inch and a half of bog soil on the top. The Cypripediums should be grown in a mixture of bog soil and sphagnum moss. I have at this moment a lot in bloom, which I consider far more interesting than one half of the tropical ones, though I am a dear lover of *all* these fantastical children of nature.

I found, a short time ago, a very singular variegated-leaved Orchis, in the neighbourhood of Matlock, Derbyshire, which, I think, may prove new altogether to us.

G. T. Dale.

Longsight, Manchester.

DESCRIPTIVE LIST OF NEW PLANTS.

Ericineæ.—*Decandria Monogynia.*

Rhododendron Nilagiricum (Zenker). A most lovely shrub, and, what adds to its value, perfectly hardy, having endured several winters in the open ground, in the nursery of Messrs. Lucombe and Pince, who raised it from seed sent from Nepal, and with whom it flowered in April, 1848, being, we believe, the first of the species that has blossomed in this country. The under side of the leaves is covered with a rufous tomentum, which amply distinguishes it from *R. arboreum,* and the flowers are white or cream-coloured towards the middle, deepening into bright rose at the outer portion of the petals. Dried Neelgherry specimens of the same species exhibit them, varying from the above state to a deep crimson.—*Bot. Mag.* 4381.

Bromeliaceæ.—*Hexandria Monogynia.*

Vriesia speciosa (Hooker). I have little hesitation in referring this beautiful plant to Dr. Lindley's genus *Vriesi,* established on the *Tillandsia psittacina*, Hooker, notwithstanding some slight discrepancies in the character. The leaves are a span or more long, canaliculate, very concave at the base, the margin entire, dark green, marked with black transverse bands. The scape rises from the centre of the leaves, a foot and a half long, (including the spike,) green with black spots, and is terminated by a compact, bright red, glossy spike of numerous lanceolate, pointed, and carinate, closely imbricated bracts, each including a single white flower, which is longer than the bract, cylindrical, curved, soon withering, and composed of three oblong, erect sepals, and an equal number of linear spathulate petals, six stamens rather longer than the petals, and a filiform style still longer.—*Bot. Mag.* 4382.

MELASTOMACEÆ.—*Decandria Monogynia.*

Tetrazygia eleagnoides (Swartz). A West Indian plant, with the branches subterete, and they and the petioles, and peduncles, calyx and underside of the leaf, silvery and whitish, or pale brownish green. The flowers are white, with broad yellow anthers, and are borne on a terminal many-flowered panicle. It was raised at Sion House, from Jamaica seeds.—*Bot. Mag.* 4383.

LEGUMINOSÆ.—*Polygamia Polyandria.*

Acacia argyrophylla (Hooker). This species is one of the many novelties sent by Mr. Drummond from the Swan River Settlement, and is no less beautiful in the foliage (phyllodia) than in its copious large heads of deep yellow flowers. The phyllodia are like the leaves of *Podalyria sericea*, everywhere clothed with a glossy silky cobweb, in the young leaves partaking of a yellow tint. The globular flower-heads are solitary or racemed; the racemes usually shorter than the leaves, and, being abundant on the upper parts of the branches, are very showy. The plant flowers in April.—*Bot. Mag.* 4384.

TROPÆOLEÆ.—*Octandria Monogynia.*

Tropæolum Smithii (De Candolle). Another very elegant and distinct species of *Tropæolum*, for the introduction of which to our gardens we are indebted to Messrs. Veitch and Son, and to their indefatigable collector William Lobb. It is a native of high mountains in Columbia, whence we have copious native specimens, not only sent by Mr. Lobb, but by Colonel Hale, who gives the elevation at Lloa, 9000 feet above the level of the sea. It is a twining succulent annual, with peltate leaves, on long slender, cirrhiform petioles. The flowers are solitary on axillary peduncles; the calyx is dull brick red, terminating behind in a long, nearly straight, subulate spur, green at the tip; the petals are cuneate, orange, all toothed and fringed, the fringe and veins red; the two upper petals small and sessile; three lower, the largest and unguiculate.

Treated as the *T. majus* and *minus* there is every reason to believe that it will prove hardy. It flowers through the summer months.—*Bot. Mag.* 4385.

POLEMONIACEÆ.—*Pentandria Monogynia.*

Cantua pyrifolia (Jussieu). Of all the *Polemoniaceæ*, and many of them it must be acknowledged are very handsome, some species of the present genus *Cantua* are pre-eminently beautiful. We have now the pleasure of announcing a species reared in this country for the first time, by Messrs. Veitch and Son, from seeds sent by their collector Mr. William Lobb, from Peru. This is, however, by no means the most showy of the *Cantuas*. *G. quercifolia* has pure white flowers, nestled among leaves as large as those of our oaks; and the *C. buxifolia* has deep rose-coloured blossoms, full four inches long. *C. pyrifolia* is, however, liable to vary. The present plant is a branching shrub, with scattered shortly-petiolated leaves, varying much in outline and size. Corymb terminal, compound. Flowers rather numerous, compact. Pedicles half an inch or more long, calyx cylindrical, ovate, green, tinged with brown, generally two-lipped; one lip has two, the other three ciliated teeth. Corolla funnel-shaped, curved, yellowish-white, or dark cream-coloured; tube longer than the calyx; limb nearly erect, of five, broadly oval, or obovate segments. Stamens nearly twice as long as the corolla.—*Bot. Mag.*, 4386.

GESNERIACEÆ.—*Didynamia Angiosperma.*

Achimenes, vars. Four hybrids raised by Messrs. Backhouse, Nurserymen, of York, with whom they flowered in August, 1847.

1, *Venusta.* Apparently betwixt *roseum* and *patens.* The flowers in size and colour are intermediate, being of an intense purplish lilac, with a bright yellow throat. It is a prolific bloomer, with small leaves of a dark green, tinged beneath with reddish purple, which latter colour also extends to the calyx, stems, and peduncles.

2. *Coccinea intermedia.* Greatly resembles *rosea,* which is evidently one of its parents; the flowers, however, are smaller, and of a brighter scarlet.

3. *Coccinea superba.* This kind bears flowers of a fine deep scarlet, with slight marks down the centre of the lobes of the corolla, and are somewhat larger than those of *A. coccinea.*

4. *Coccinea grandiflora ignea.* The flowers of this kind are of a fine crimson scarlet, very rich and brilliant, of a round form, with compact clean edges; it is a free bloomer, and altogether very fine. The habit, like those of Nos. 2 and 3, resembles *A. coccinea.—Pax. Mag. Bot.*

BROMELIACEA.—*Hexandria Monogynia.*

Tillandsia stricta (Sprengel). Although the present subject is a very old inhabitant of our stoves, being introduced by Lady Neal so long ago as 1810, yet as a Bromelwort, it would be difficult to find a more beautiful little plant; indeed it is quite a gem, and we are induced to bring it before our readers in the hope that this notice of its merits may lead to its becoming more extensively cultivated, as at present, with a few exceptions, it is almost unknown. The plant is very small, has a ball-like appearance, with its richly coloured flowers bristling from every side, and may be grown suspended from a rafter. The specimen is but an inch and a half long before the flower-scape appears, and this does not extend three inches farther, and is of the richest crimson, both stem and bracts, and the tiny flowers are of a fine purple.

Attached to a block of wood, with a little moss to cover the roots, and hung from the roof of the stove or orchid-house, it will grow and flower freely, and may be easily increased by suckers.—*Pax. Mag. Bot.*

FUMARIACEÆ.—*Diadelphia Hexandria.*

Dielytra spectabilis (De Candolle). This handsome herbaceous plant was first introduced from the North of China to the Horticultural Society by Mr. Fortune, in 1846, who found it growing in the gardens of the Mandarins, and by them highly esteemed. It fully bears out the character given of it in the 'Journal of the Horticultural Society,' where it is stated to be "beyond all comparison the handsomest of the natural order of fumeworts. The stems grow from a foot to a foot and a half high ; the leaves are palmately trifid ; racemes axillary, four to six inches long, each containing about twenty flowers, the petals are four in number, the two outer ones crimson purple ; each with a very blunt, ventricose, short, sheath-like spur at the base ; two inner ones narrower, and projecting far beyond the revolute points of the outer ones, white, with a purple tip.

As a pot plant for rooms, it is extremely graceful, and remains for a long time in flower. Its habits are the same as the well-known *Dielytra* (*Fumaria*) *formosa*, a plant common in all gardens, where showy herbaceous plants are grown, The stems die down in autumn, and the roots remain in a dormant state until the following spring, when the plant again appears above ground, and flowers in the months of May and June.

Being a native of Siberia and the northern provinces of China, there is little doubt but it will prove perfectly hardy, although it is yet too scarce and expensive a plant to allow of a fair trial being given. Increase is effected both by division of the roots and by cuttings. It will prove a most useful plant for early forcing, as it needs only a moderate amount of heat to excite it to bloom.—*Pax. Mag. Bot.*

FANCY GERANIUMS.

In furtherance of the idea broached a few months back, regarding a new name for the very interesting class of Pelargoniums now becoming popular under the above title, we have received several communications bearing upon the subject ; all the writers concur in the desirability of a better term, both because of its pre-occupation in connexion with the older showing varieties, which, as a class, have engrossed as much general attention and "fancy" as any flower now to be named ; and also, because the word conveys so little notion of their peculiar character.

One correspondent, founding his suggestion on the old name of "Pencilled Geraniums," applied to the previous class, proposes the present shall be called "Annular Geraniums," on account of the band of colour which usually encircles each flower; but as this band is not necessarily present in each variety, some being without colour on their lower petals, and others having it in the form of blotches, we think "annular" would be a misdescription, or at least would not properly apply to the whole class.

Then we are reminded by several friends that the class is of continental origin, our Gallic neighbours claiming the merit of being the first to discover its beauties, and therefore the term "French," would be just and appropriate. Now with every desire to yield honour to whom honour is due, we must beg to demur to this appellation. It is true, the cultivators of France adopted the class at a period somewhat antecedent to ourselves, a circumstance which has happened with other flowers, and in those cases, though the growers of each country have started from the same point, by pursuing different courses, dictated by a variation in taste, they have arrived at such opposite results as to destroy all connexion in the races of the two countries. A familiar instance of which is presented in the carnation; and as we are about to task our skill in *improving* these pelargoniums, it is at least probable that in a few years the distinction will be equally great; the Gallic appellative would then be as unsuitable as to call our fine varieties of the tulip "Dutch bulbs."

Françoise recommends them to be called "*Mignons,*" a term sufficiently expressive of their pretty neat style of growing and flowering; but we confess a partiality to our own language, and would rather find a name for them in English.

The majority of our correspondents are in favour of a poetic rather than a strictly descriptive term, or at least they recommend that the first shall not be sacrificed in a vain endeavour to secure a concise accuracy, which, however desirable, is hardly attainable, on account of the ever-varying character of seedlings; with this idea we fully concur, and therefore propose they shall be named, as are the little *Rosa Lawrenciana* and *Indica minor;* a corresponding degree of miniature beauty exists between the two families, and hence we think they may with equal perspicuity be denominated "Fairy Pelargoniums."

FLORICULTURAL HINTS.

The propagation of picotees and carnations by layers and cuttings will occupy first attention through the first fortnight of this month. Those who have their plants early may possibly have begun it already, but if proceeded with at once no time need be deemed lost. As I am writing for the tyro, it may be well to describe the operation of layering in detail. The requisites are a number of small pegs, either of fern or the twigs of old birch brooms, or, where these are not easily procurable, leaden hooks are sometimes used, which have an advantage in durability, as they last and are at hand for several seasons; a sufficiency of light rich soil must also be prepared, loam, leaf-mould, and sand, in about equal quantities, well mixed and sifted, is perhaps the best; these, with a long-handled budding-knife, having a narrow blade with a very sharp edge, being at hand, we may commence, by trimming away the lower leaves of such of the lateral shoots as are intended to be layed; when these are prepared, the surface of the old soil in the pots should be well stirred, and part of it removed if at all mossy or sour, and some of the fresh mixture introduced; about a couple of inches of this is necessary to facilitate the rooting of the layers, which are then to be formed by entering the knife a little below a joint, and allowing it to proceed just into the centre of the stem, the cut should be brought upwards through the joint for about an inch and a half; on withdrawing the knife, a tongue will have been formed, the tip, or that portion below the joint, is then to be cut off, and the layer may be pegged down at once.

In the event of there being a great number of layers in the pot, it may be necessary to trim off the points of the remaining leaves, to prevent crowding, but the practice has nothing to do with the production of roots, as is sometimes supposed. When any of the shoots are produced so high up the stem that it is impossible to lay them on the surface of the pot, it may be necessary to place another small one to receive the layer, and in the after-management, this will require a good deal of attention to keep it properly moist. The whole of the layers being put down, the pots must be removed to a shaded position, and if they can be kept rather close for a week two, it will help them very much; a cold pit that will hold them is the best place, and next to it, the stage under the awning where they bloomed, and by keeping the paths damp and the side-cloths close, much may be done for the wounded layers.

By the end of the month, the pink pipings of last month will be rooted fit for removal; a bed should be made for them, and the plants stationed as soon as possible; a very great proportion of next year's success in blooming depends on getting the plants well established in the bed before winter, and if they can be allowed September to grow in, this point is properly secured. The bed should stand in an open place where it can be well drained, and should be composed of rich turfy loam two parts, rotten hotbed manure one part, and a similar quantity of road-scrapings, that taken from a macadamized road where there is plenty of traffic being the best; and in the absence of such material, sea or coarse river sand should be used.

Pansies recently struck should be planted out whenever the chance of a shower of rain occurs; and preparation must be made for striking the winter store to be kept in pots.

The middle of this month may be regarded as a very good time to sow a bed of seed to bloom early next spring; if these are got forward, there is a good chance of their standing through the winter. The large plants in beds should have three or four small sticks thrust down beside them, to guard them from the effects of wind, which frequently injures or destroys the strongest, by blowing them to and fro till the stem is broken.

Dahlias will require a good deal of attention, the shoots must be thinned, and those selected for blooming should be tied out separately; from three to five stems are generally considered sufficient, and beyond this, any laterals proceeding from the main stem, except near the top, should be rubbed off, so also the coarse shoots proceeding from the bottom of the principal laterals may be dispensed with, as they only tend to crowd the plants with useless foliage. The blooms will now be coming in some order, and here also a little judicious thinning may be beneficial, though I would caution the beginner against going too far with it, especially among the uncertain or hard-edged kinds, as it often tends to make bad worse.

The shades may now be got in requisition, and if any repairs or painting is wanted among them, let it be done at once; keep a close watch upon the earwigs, against which there is no better remedy than an examination of the traps every morning.

FLORISTA.

DOUBLE STOCKS.

Good handsome double stocks never fail to attract notice, and excite admiration wherever they are seen; every gardener desires to have them, and yet how frequent the failures. I am a great admirer of these flowers, and annually bestow great pains upon them, though with such variable results as to reduce the result to a mere chance; sometimes I succeed in obtaining splendid flowers, and again in the succeeding year they are nearly all single. There is certainly a mystery about this particular branch of floriculture, in which others are not involved. For instance, it is a well-known fact, though to me utterly inexplicable, that the same seed under the management of one person shall produce nearly all double flowers, while with another individual the produce will be almost totally single. The London seedsmen might furnish the horticultural world with a fund of amusement, were they to keep a register of the very opposite accounts received from their customers of the very same sample of seed: here it is excellent, there a total failure; and these very different results seem to be incapable of explanation.

A few years ago I received from a friend a few plants of Brompton stocks, from which I had a fair proportion of double flowers, while those of my friend were nearly all single, although he planted perhaps ten times as many. This seed was sown early in spring, and in the autumn the plants were, in my opinion, much too luxuriant; this I confess might have been the result of prejudice, as it had been my invariable practice for many years to sow my biennial stock seen in July, without once suspecting that my frequent failures might possibly be attributable to that circumstance.

Some eight or ten years since, I possessed a collection of

German stocks, which were as fine as it is possible to conceive, producing for the first two or three years a large proportion of double flowers. Every succeeding year, however, I continued to obtain a less and less proportion of the much-desired double flowers, and notwithstanding every attention to changing the soil and securing strong plants, they grew worse and worse, till I was compelled to relinquish them altogether. It is an old saying, that stock seed should be saved only from plants standing near a double one, but as I have always been particular in following this rule, I must confess I have not much faith in it. There is another remark that appears more reasonable, namely, that seed should be preferred from plants which show a disposition to become double, by producing more than the natural number of petals; but this would limit the supply of seed to a very small quantity, and I am inclined to be of opinion, that more depends upon the time of sowing and planting than at first may appear probable, and I should therefore feel obliged for any practical observation bearing on that part of the question; and also as regards the land,—whether ground in a high state of culture, or its opposite, is most likely to produce them double? whether changing the seed from one part of the kingdom to another would have the desired effect? an improvement, I know, attends the exchange of culinary productions, and I am disposed to think it may be of benefit in this instance. And again, has the form of the root anything to do with it,—some having fibrous roots, and others running directly downwards with few or no ramifications? Trusting the subject may not be undervalued, but that every one who has anything really of consequence to communicate on the subject will have the liberality to do so, and thereby confer a benefit on the public. I am, &c.,

J. T.

We insert our correspondent's inquiry at length, because his case is that of hundreds who suffer disappointment annually; nor, so far as we are aware, can any very satisfactory explanation be offered. Our own case, however, is an exception; we are of the fortunate class, never having to complain of a paucity of double flowers, though often vexed at the small size of the plants, occasioned by an inopportune spell of dry weather, or some such cause. We grow only German stocks, and have had our present collection about ten years, without any perceptible decline in quality.

Here is our practice, and may it be of assistance. The seed is sown in March, on a warm border of light rich earth, beneath a hand-glass, any other protection being unnecessary, or indeed attended with ill effects, as if kept warmer the plants are liable to be drawn, and we attach much importance on having them as strong (not large) as possible when transplanted. This operation we contrive to perform in showery weather, about the end of April if possible; and in consequence of its being dry in some seasons, just when they should have been transferred to the borders, we have occasionally had but miniature specimens to admire, still, however, there was no lack of double flowers. The ground prepared for them is made tolerably rich, and is always light and porous; every assistance is given the plants in the earlier stages of their progress, and when the single plants are discernible, we trim away all the lateral shoots, leaving only the central stem of flowers, the object being to have the seed as strong as possible, as, according to our notion, double flowers are a consequence of extraordinary vigour in the parent, and if a healthy progeny of such extraction receive proper encouragement in the early stages of their existence, the result is nearly certain to be satisfactory; there may be exceptions, but the same average success has ever been our fortune on different soils and in various situations. The obsolete twaddle about the roots, and the effect of double flowers on the seed, are no longer worth talking about.

CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS. AUGUST.

Fruit Garden. Wall trees will probably require looking over again to remove lateral growths that are not wanted, and to nail in the most vigorous shoots. These must be kept close to the wall, that the fruit may have the best chance of ripening. As the earlier kinds arrive at maturity, means must be taken to guard them from birds and insects—a piece of gauze strained over the whole tree is perhaps the best. Snails and ants are also troublesome at times; they may be kept down by drawing a line with tar along the bottom of the wall, and round the base of the trees it may be spread on the ground. Gather the early apples and pears a little before they are ripe, and, by proper care in the fruit room, they may be preserved considerably beyond the time they would hang on the trees. Mat up late currants and gooseberries, to preserve the fruit till a late period. Strawberry runners should have good attention this month; a full supply for forcing should be first secured and potted, choosing entirely from the very strongest, and subsequently encourage them to root well, that they may be well established before they are put away for the winter. This month is undoubtedly the best time to make new plantations. The ground for the purpose should be well dunged and trenched, and the strongest remaining runners may then be planted in rows eighteen inches distant from each other, and the plants nine inches apart in the rows. This is double the number that will ultimately be required; but, after the first fruit is gathered, the superfluous stools may be taken out.

Continue to look over the vines, and stop the lateral growths, which otherwise at this season will soon smother the fruit. Keep the leading shoots neatly fastened in their places, and see that the previous shreds have not become tight by the swelling of the branches: such as appear to pinch should be taken away or loosened.

Stop the foreright shoots of figs, or prune them completely away, and lay in the leaders. As the fruit swells, the foliage may be gradually thinned, to admit the influence of the sun to ripen and flavour it. Recently planted trees must still have attention; they are not likely to suffer from drought now, but it will assist them much if the ground is kept stirred over their roots.

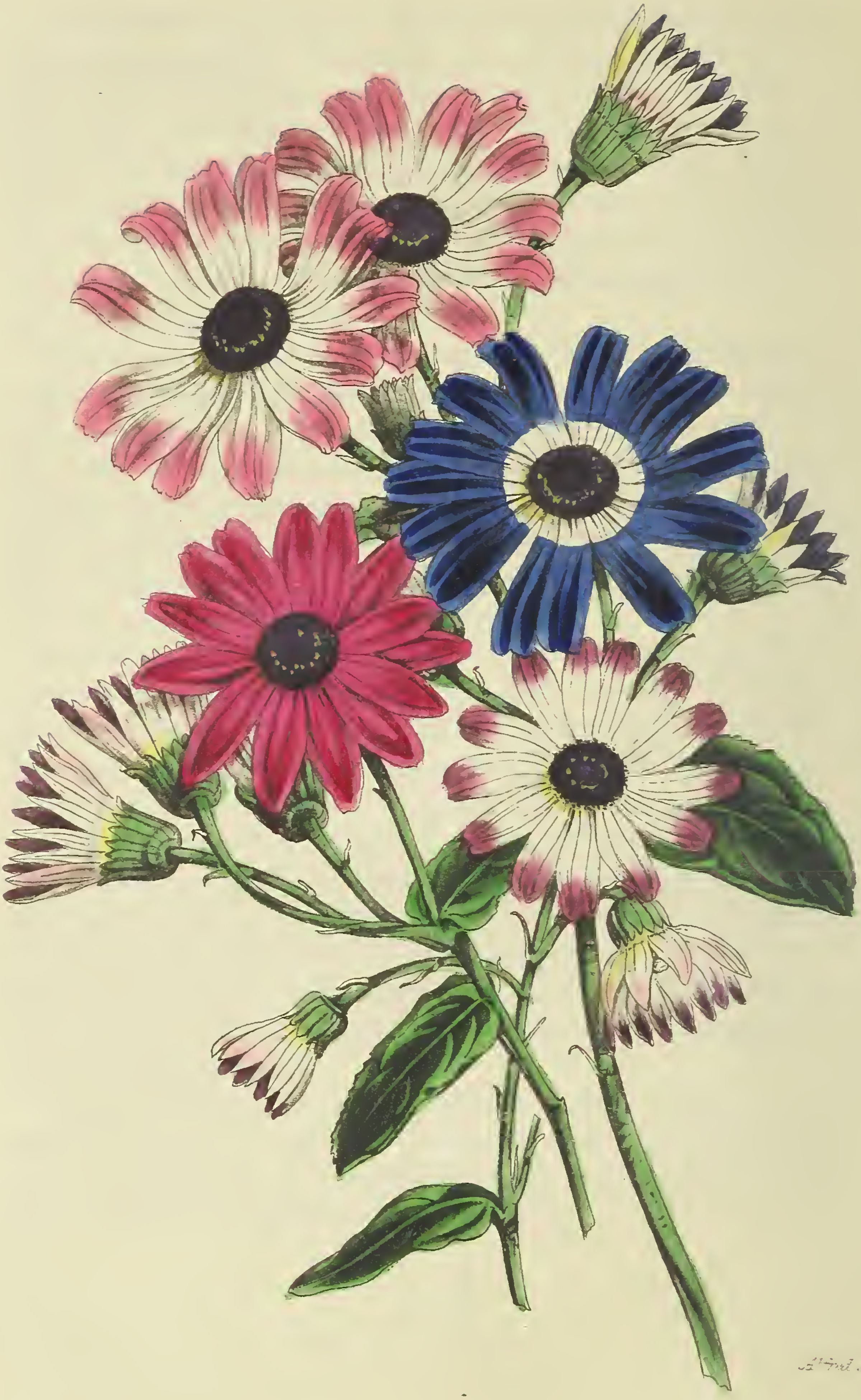
Forcing Garden. The houses containing ripe or ripening grapes should be well ventilated: the preservation and flavour of the fruit depend greatly on this. Wasps and flies should be excluded by gauze curtains, drawn along the sashes.

The shifting of succession pine plants must be gone on with as rapidly as possible. The bed to receive them should be made up with about half new tan, so as to have a tolerably brisk heat when they are returned to their places; taking care at the same time that it is not hot enough to burn their roots. If any danger of this kind be apprehended, the tan should not be filled round the sides of the pots for a few days, or till the heat has declined somewhat. Pines with ripening fruit should be kept rather dry, and have plenty of sun and air.

Repair the linings of the late crops of melons and cucumbers, as the wet likely to fall about the end of the month will otherwise stagnate them, and mildew result, a state from which it is very difficult to recover them. Give plenty of air when the weather is fine, and avoid shading, which is never necessary when the roots are healthy. If red spider make its appearance on the melons, water the beds freely, and shut them up early in the afternoon, till the pests are reduced.

A good supply of well-dried, short grass should be provided now, where much fruit is likely to require packing. It is the very best material that can be used for the purpose. And the fruit gardener should now employ himself in a sharp look-out for wasps' nests, or he will suffer in the next month. They may be easily destroyed by pouring a small quantity of spirits of turpentine into the hole, and stopping it up; or, if it slopes too much to admit of this course, introduce the mouth of a phial containing the spirits, and close all openings; or the old-fashioned method of suffocating them with a sulphur squib may be resorted to. In either case, the nest should be subsequently dug out and destroyed.

Occasional leisure should be taken advantage of to get the fruit room in order. Remove every atom of dirt or rubbish, and have the shelves in good repair for the reception of the main crop of fruit, as soon as it is fit for gathering.



Alfred Adlard Sc.

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THE CINERARIA.

WITH AN ILLUSTRATION.

It is the province of the cultivator to look far into the future for the results of present operations, and without this faculty of forethought his best exertions prove abortive; we are but just passed the summer, surrounded by floral beauties on every hand, the treasures of the garden are displayed in rich profusion, and objects of admiration court our every step; the gardener, however, is already turning his thoughts from the gratified approval of past labours to the preparations necessary for another and more dreary season; his winter flowers already engage attention, and among them, as the queen of spring, the Cineraria occupies no inconsiderable share.

In order to secure early blooming plants for next year, it is necessary to prepare the stock either in July or beginning of the following month; the earliest flowering specimens are produced from cuttings struck then, and to succeed them, seed should be sown at the same time. The culture of established varieties is by no means difficult, and as few plants exceed them in gaiety through the spring months, when flowers are so much esteemed, it is by no means surprising their acknowledged usefulness and beauty should have made them favourites alike in the greenhouse and the sitting-room; the fragrance, too, of many varieties is of that subdued and pleasant tone as to be grateful even in a confined atmosphere.

An examination of the specimens which bloomed last spring will show at this season a number of lateral stems, proceeding from the base of the old plant; many of these, in all probability, will be found to have formed roots which have taken hold of the soil beneath them; such as these offer a ready means of increase, they need only be detached close to their origin, and carefully lifting the roots out of the earth, are distinct plants at once; if they are potted and placed in a close frame for a few days, scarce any check will be felt from the removal; the remaining portion may be taken away at the same time, and struck in the manner of ordinary cuttings, under a hand-glass, on a warm border, where, in sandy soil, they will emit roots in a fortnight, and may then be potted, and kept along with the previous lot of young plants. If it is designed to raise seedlings, the seed should be sown as soon as it is ripe, because then no artificial heat is necessary, and stronger plants result than happens when it is employed; fill a pan with light rich mould, press the surface moderately firm and quite level, distribute the seed equally over it, and cover very thinly with clean white sand; the seed of the Cineraria is in the form of minute black grains, and, from its small size, is liable to injury if buried more than the thickness of a sixpence; the pan may be placed in a cold frame, or beneath a glass, and, if kept moist, the young plants will appear in a few days; let them have plenty of air, with shade from strong sun-light, and by the end of August they will be in good condition for potting; place each one in a three-inch pot, filled with loam and leaf-mould, lightened with sand, if necessary, and station them along with the previously obtained plants in some sheltered and shaded place out of doors, as at the foot of a north wall, where they will establish themselves before the winter. Early in October those which are desired to bloom first should be shifted into larger pots, and taken to their winter quarters; the others may remain a week longer, or till danger from frost is to be feared, when they also must be taken in doors. No better place can be devised for these plants through the winter than a good pit, where they are secure from frost, for, though easily injured by it, they are equally impatient of heat, and if they can be accommodated with a cool bottom to stand on it will be all the better. In January, February, or March, according as they are wished to flower, the remainder are to be shifted into their blooming-pots, and the size of the plants will be exactly in proportion to that of the pots, the larger they are employed the finer will the plants grow; the quality of soil also must be increased; a mixture of two parts loam, one part leaf-mould, and the other rotten manure, will be found to suit them; and at a subsequent period an occasional application of liquid manure will give depth of colour and richness to both foliage and flowers. While in bloom, Cinerarias require a light airy situation, with a temperature averaging about 40°, though they do not refuse the higher one of a room, and the only care indispensably necessary is a moderate supply of water, and constant attention to the suppression of insects; green flies are much to be dreaded on these plants, for if they once effect a lodgement, the destruction of the bloom is certain; fumigating with tobacco is the readiest means of destroying them, or they may be taken off with a long haired brush. Through the summer the plants must be kept cool and shaded, and their after-treatment will be merely a repetition of that described, though, from their increased size, larger pots will of course be necessary. Cinerarias raised from spring-sown seed form excellent bedding plants, as they continue to bloom throughout the summer when turned into the open ground. The subjects of our illustration are seedlings, the production of Charles Eyland, Esq., of Walsall, and exhibit a very great advance both in size and substance, as compared with the best that have previously come under our notice; the blue variety is decidedly the largest flower we ever saw, one of the blooms received measuring an inch and three quarters in diameter; an even and well-formed flower. The others were equally stout, with petals sufficiently broad to present a perfectly regular surface, and an outline as nearly circular as it is probable we shall ever obtain in this family. The whole of the varieties will be esteemed as valuable additions, even to the best collections.

THE OXALIS.

In the preparation of winter-flowering plants, wherever the convenience of only a common garden frame can be commanded, some individuals of this genus should be included. There are a great number of them—the greater part bloom in winter—and nearly all are extremely pretty. They are plants, too, of the easiest culture, requiring little or no attention, except while they are most beautiful. For six months they may be laid away, and during the other period they will contribute greatly to the embellishment of all plant structures; or, so docile are they, that it is quite possible to grow and flower them to perfection with no other means than the sitting-room window, having a tolerably good aspect. The species to be preferred are such as the pretty little *tricolor*, whose buds of pink and white, in distinct spiral lines, are so interesting; *Bowei*, with large, rosy-crimson flowers;

grandiflora and *Simsii*, both varieties of *variabilis*, and producing white blossoms; *Emmersonii*, with bright, clear yellow flowers; or *speciosa*, having purple blossoms. From the aspect of these an idea may be formed of a more extended collection; with the exception of *Bowei*, they are all dwarf plants, not rising more than two or three inches, and clothed with tender, green, clover-like leaves, which are sufficiently ample to cover the surface of the pots, and producing a copious display of flowers from the commencement of winter till the following spring.

Their management may be thus briefly described. About the beginning of September the roots will begin to grow, when they should be separated and potted, placing either two or three in a three-inch pot; or, if preferred, a greater number in a rather deep pan. The soil should be peat, leaf-mould, and sand, in equal quantities; the principal point being, to have it very light and porous. In such a mixture the roots may be buried about half an inch below the surface; and, if placed in a warm part of the garden and moderately watered, they will grow rapidly, so that by the end of the month they will be pretty well furnished with leaves. Early in October it will be necessary to take them in-doors: the greenhouse, a frame, or the parlour-window—in fact, any position in which they may receive light, plenty of air, and a moderate supply of water—will suit them; and, in return, their delicate and beautiful flowers will be displayed throughout the dullest season of the year.

In March or April, when the foliage begins to decline, the pots may be placed on their sides in some cool place, where they are secure from mice, and not likely to be frozen or saturated with water; and thus the plants will safely remain till the time arrives for repotting.

HORTULANUS.

FORCING ROSES.

THOSE who have an idea of forcing roses, and are not yet provided with a sufficient stock of plants, should lose no time in securing and preparing them. The success of this very interesting operation depends mainly upon the state of the plants when about to be subject to the influence of artificial heat; and, as rose-buds are among the most esteemed of floral productions in early spring, a few brief hints regarding the more prominent features of the management proper to attain them, may be of service at the present season. It is always desirable to have plants which have been one whole year in pots to commence with; but, if such are not at command, let a sufficient number of the small, young, and healthy, be selected from the borders directly; and, after rejecting such as are not well furnished with roots, pot the remainder without loss of time.

It is not generally known that the stronger suckers from such as the common moss and Provence roses may be separated and forced in four-inch pots. They, however, form very nice little specimens, and, if well managed, throw from two to four flowers each. Of course it is advisable to select only such as are well-rooted, if to be forced the same season; but the weaker ones may be potted at the same time, and will make excellent subjects for the next year's operations.

Roses, when grown in pots, require very good soil. Under any circumstances this is necessary, but still more when they are to be subject to the enervation of forcing. Turfy loam and thoroughly rotten manure, in the proportions of two and one, together with a little sharp sand, make an excellent compost, and the pots, being well drained, the plants may be put into such a mixture without reducing the branches for the present, or indulging in any pruning, except the removal of a lacerated root appears to be required. For six weeks or two months they should stand out of doors, in a warm part of the garden, the object being to properly ripen the branches; and when this is completed, which will be by the middle of October, they may be cut down in the usual way and taken into a cold pit or frame. A month's preparation here, by the aid of a slightly raised temperature, consequent on keeping the lights closed, will induce the buds to swell, and then a gentle application of heat will enable them to burst and commence growing with the desired vigour. It is an essential point in forcing roses, even where thoroughly established plants are employed, to avoid any sudden changes of temperature; and, as we are speaking of such as were potted only in the preceding autumn, especial care must be insisted on in this respect; and, as allowance has to be made for their imperfect condition, it is not advisable to introduce them to heat before the end of November, so as to afford them as much time as possible to make new roots and obtain a good hold of the new soil.

Where provision has been made by potting the plants a twelvemonth before, the first lot may be taken to the forcing-house early in October, and such plants usually bloom about Christmas, the continuance of bloom being kept up by successional introductions, at intervals of about a month. A hundred pots, divided equally in this way, will furnish a nice display through the whole of the spring months.

As regards their management in the forcing-house, there are a few particulars worth mentioning. If worms are suspected to be in the pots, each should receive a good soaking with lime-water. This will speedily turn them out; and then for a week the plants will require no more moisture than they obtain from the atmosphere of the house. The temperature at the beginning of the season need not be higher than 60° in the day, rising gradually to 80° as the flower-buds swell, but allowed to fall at least ten degrees below the day-range every night. Unless the erection is devoted to roses alone, of course the temperature cannot be exactly thus regulated to suit the perfected and incoming successions, and as, in private establishments, there are more things than roses to force in the same house, we must endeavour to accommodate all at the same time, by placing the latest admissions at the coolest part, and by degrees, as they advance, move them towards the source of heat. Thus, if there is a difference of ten degrees in the temperature at the opposite ends of the house, the roses should stand through the first week at the coolest end; in the second at the middle; and in the third week, being then in active growth, they may be moved to the warmest part, and so make room for new arrivals. The expansion of the first leaves should be the signal for the application of stimulants; a top dressing of fresh sheep's dung may be placed in the pots, or liquid manure of rather strong character may be given twice, and, as more leaves are developed, thrice a week, in addition to the ordinary waterings; and the syringe must be freely used up to the bursting of the flowers. This is beyond question, not only the best remedy, but an effectual preventive of the spread of insects, and, by keeping the plants clean, conduces greatly to their general health. The most strenuous exertions will, however, be insufficient to completely prevent the appearance of insects: green-flies are certain to be found upon the plants at some time or other, and immediately they are seen, the house must be fumigated with tobacco-smoke; or, indeed, it is better not to wait for their appearance, but to apply the smoke once a fortnight regularly through the season: they cannot then obtain any hold.

Another still more dangerous pest is the larva of the rose-beetle. The eggs which produce them are laid upon the plants in the previous summer, and the same warmth which sets the vegetating powers of the plant in action, gives life to these destroyers; and, by the time the young shoots have grown half an inch in length, the grubs will be found devouring their hearts. The most unremitting care is then necessary to detect and remove them, or the blossoms are certain to be destroyed. Nothing but hand-picking can be depended on, and the plants should be looked over once or twice every day.

The removal of the plants from the forcing-house is a matter requiring almost as much attention as their introduction; in order to prolong their beauty it should be done as soon as the flower buds are well coloured; the change to a cooler atmosphere has an effect which causes the plant to remain stationary for a considerable time, and we must therefore get them just so far advanced as to be worth admiring, but at the same time carefully observe they do not remain beyond that stage, as a day or two makes much difference in the flowers, and if allowed to stay till about to expand, much of their ornamental value is lost. It is also desirable to stand them in a rather warm position when first out of the house; the sitting-room or conservatory usually receives them, and there we have to guard against draughts, for if subject to a chill of the kind, an unpleasant blackness spreads over the blossoms, the foliage curls, or falls off, and an unhealthy aspect is soon visible throughout the plant: water should then be given cautiously, and it is worth remembering the drier the atmosphere, the more powerful will be the perfume of the blossoms; light enough to prevent the leaves becoming etiolated is also necessary, though the flowers will wear a richer appearance if partially shaded. Throughout this stage the plants will still be subject to attacks from green-flies, but a single fumigation will remove them, or they may be kept down by frequent application of the vapours of ammonia or common smelling salts.

The decline of the flowers marks another era in the management of the plants, instead of being thrust into a back shed or other out-of-the-way place, as is too frequently the practice of those who forget or are not aware that these plants may be again forced, and will make the best specimens that can be procured for the purpose; they should be stationed in a good pit or the front of the greenhouse, where they may have light and warmth enough to continue them in a growing state, some help being given them at the same time in the way of liquid manure, so as to induce a strong and healthy development of branches. By continuing them in such a position till May, no check to their progress begun in the forcing-house will be experienced, and when the weather will permit their removal to the open air, it will be well to set them at the foot of a south wall, and keep them rather dry for a fortnight, that the new shoots may become perfectly ripe; after which, as the whole summer is before them, and also as it will be useless to attempt keeping them dormant for so long a period, they had better be repotted, pruned rather closely back, and set growing again. Thus by a little attention in the early part of the season, an extra growth is entirely gained, and, as a matter of course, the number of flowers greatly increased on each plant in the next year's forcing, while the neglect with which they are too often treated after blooming, results in the loss of great part of the stock.

That the plants are worth the extra trouble recommended, will be unequivocally evidenced in the first trial; in fact, the individuals so treated will be found to force with much greater freedom than attaches to others fresh from the borders, owing to the predisposition to grow at the particular time induced by the previous forcing, and this character will grow upon them so strongly by the force of habit, that, like the grape-vine, after a few years' forcing, they will break into a new growth in winter even in the open air. To meet the extra demands of this double action, it is necessary to treat them liberally with manures, to repot them annually at the commencement of the summer growth, and to cut them back rather closer than usual at the autumn pruning; the last operation has a twofold object, it not only tends to make the succeeding shoots more than ordinarily strong, but by its judicious employment the specimens are kept of a manageable size, for notwithstanding the length of time a rose tree will continue in vigour under such treatment, it by no means follows that it must out-grow the accommodation convenient to allow it, but rather that by concentrating its increasing powers in a few branches, so much additional beauty should be imparted to the flowers. And as regards root-room, though repotting is recommended to be done annually, it is not absolutely necessary to place them in larger pots at each operation, but rather regulate the space allotted to the roots, by the size of the anticipated head when again under the influence of the forcing-house. In conclusion, I may remark the bloom-buds produced in the course of the summer growth of the plants should be removed as soon as they are seen, in order to economise the strength of the branches; during the same period it will also be necessary to clean the foliage of insects as occasion may require, and to protect the roots from fluctuations of drought and moisture, and to save trouble in watering, the pots should be plunged to the rim in coal-ashes.

The following selection may be recommended as containing really fine, free-flowering, and for the most part richly-scented varieties.

Tea-scented. Souvenir de Malmaison, Maréchal Bugeaud, Barbot, Madam Guerin, Princesse Marie, Miranda, Triomphe du Luxembourg, Smith's Yellow.

Bourbon. Charles Duval, Armosa, Queen, Cèlimene, Justine, Comice de Seine et Marne.

Moss. Common, Prolifère, Du Luxembourg.

Hybrid Perpetual. La Reine, Duchess of Sutherland, Madame Laffay, Julie Dupont, Duc d'Aumale, Pourpre Royale, Prince Albert, Louis Bounaparte.

These, with a good supply of the common Provence or cabbage rose, will be sufficient for any ordinary establishment.

C. T. D.

[The following require only greenhouse treatment to have them in flower through the winter and spring; they also bear winter culture.

Hybrid Chinese. Gen. Allard, Gen. Kleber, Lady Stuart.

Crimson Chinese. Belle de Florence, Fabvier, Marjolin, Reine d'Angleterre.

Tea-scented. Bride of Abydos, Caroline, La Sylphide, Laura, Nina.]

OBSERVATIONS ON TRANSPLANTING.

The planting, or more properly transplanting, of trees and shrubs, both deciduous and evergreen, is a subject likely to engage attention in the course of the next two or three months; and, judging from the manner in which the operation is but too commonly performed, it would seem that some further instruction is yet required to make the principles on which the work should be conducted, more generally understood. One of the most important questions connected with the subject, is the time most proper for its performance: on this head various opinions have been expressed by practical men, some preferring the autumn, others the spring months, and even Midsummer has been recommended for the removal of evergreens; but as practice is often influenced by extraneous circumstances probably unknown to, and not thought of by the operator, it may be well to look a little further for advice, and in the physiology of the plants themselves seek a reason for preferring this or that particular time.

The principal inspiratory organs of a plant are its roots, and it is well known there exists a most intimate and mutually dependent connexion between them and the other parts of every vegetable form, through which an injury offered to the one becomes an indirect infliction on the other; and hence if we would preserve the trunk, branches, and leaves, we must, as a primary measure, consult the welfare of the roots. Ordinary trees and shrubs are furnished with roots, which, springing from a common centre, extend themselves downwards and laterally, throwing out at irregular intervals, other smaller roots, which again ramify in every direction; each of these rootlets has the power of extending itself by means of a perpetually accumulating matter received from the upper portion of the plant, and deposited layer over layer at its extreme end; these points or spongioles, as they are termed, are exceedingly delicate, are injured by very trifling causes, and, like all other recently formed vegetable matter, are extremely hygrometrical,—and thus having the power to absorb fluid or gaseous bodies, they are the main dependencies or feeding organs of the entire plant: this being their nature, we may readily conceive that they can only perform their office when in a moist medium, and experience shows that, with a few exceptions, they will not otherwise exist.

The connexion before mentioned as existing between the roots or lower portion, and the head or upper part of the plant, is evidenced by the rise of the sap in spring, and its return in autumn, as seen in the fall of the leaf. In the first case an immense supply of liquid and gaseous matter is forced or drawn up from the roots, and in the latter a due proportion is returned after elaboration for their nourishment and increase through the winter. It follows, then, that to remove a plant in spring after this action has once commenced, is to subject it to a very serious check through an insufficient supply of food; for with the utmost care it is impossible to take a tree or shrub from the place where it has been growing in the ground, without injury to its roots, the smaller fibres, which are the most active organs, being the most readily damaged, and in plants of size by far too numerous to be entirely preserved. As the roots are to be regarded as the absorbing organs, so the leaves have been determined to possess a powerful perspiratory action, and it is the exhaustion consequent on this waste, that renders the removal of deciduous trees impossible in a growing state.

Hales, an accurate observer, ascertained that a sunflower three feet and a half high, perspired in a warm day thirty ounces avoirdupois; and if we draw a comparison between the evaporating surface of such a plant, and the area of the almost numberless leaves of what would be called an ordinary sized elm or lime tree for removal, we may form an idea of the demand such a subject would make upon its roots, was it only to supply positive evaporation, without regard to what should be present for secretion. And it should be remembered, this perspiring action is always great in proportion to the action of the sun, so that our spring-transplanted trees and shrubs are, by reason of the recent change in their position, but inadequately supplied with food when the greatest demand is made upon their sustaining powers. Very early spring planting, it is true, is less objectionable in a theoretic view, but then the state of the weather, or the ground, renders it almost impracticable, for either the latter is so wet that the least trampling reduces it to puddle, or the surface is frozen, and planting of an ordinary kind is out of the question. All these reasons lead to the conclusion that the spring months are not the most desirable time for transplanting, for though instances may be adduced in support of such a view, and a wet summer would certainly prevent much loss among recently moved things, yet we cannot foretell with any degree of certainty what the season may be, and if we can avoid the evils attendant on late planting by performing the work at another time, it would be unwise to incur a useless risk.

It may be gathered from what we have before said respecting evaporation, that in the autumn, instead of their remaining any demand upon the roots, from the period the leaves begin to decline, the action of the fluid secretions is reversed, and the roots then receive their principal nutriment. The mere fact of a cessation in the perspiratory process, should be sufficient to determine us in favour of autumnal planting, as it is evident there can be then no loss, and but little stoppage in the vital functions of the plant, for though, as will necessarily happen, the roots are mutilated in the removal, the downward passage of the sap immediately supplies a remedy, and instead of a serious evil, the result is rather of an opposite tendency, for the granulations then formed at the wounded end of the fibre, in the course of the winter are developed in the form of more spongelets, and the tree is positively benefited by the addition of more useful roots. Nor is there any material difference in this respect between deciduous and evergreen plants, for though the latter retain their foliage throughout the year, the epidermis or outer coat of the leaves becomes thicker and hardened by the autumn to an extent which reduces their evaporating powers to almost a nullity, and their roots are in precisely the position of those of the opposite class; the amount of perspiration which may still go on in the evergreen, should rather induce us to prefer the autumn to any other time, as the amount of moisture in the atmosphere is then greater than either in spring or summer, and therefore though the powers of the foliage remained precisely the same, there would necessarily be less waste.

In the face of so many irresistible facts, it is really astonishing that cultivators will still defer transplanting till March or April, and tell us they do so from conviction of its superiority, forgetting alike the extra trouble such trees occasion in the subsequent summer, in the way of watering, and the additional comfort with which the work may be done in autumn, when the earth is comparatively dry, and no necessity for the hurry and confusion but too frequently observed when driven off till the spring.

As regards the operation itself, a good deal more care than is usual might be bestowed upon it with advantage. The barbarous system of tearing the plants up, or drawing, as it is called, still pursued in nurseries, cannot be too strongly reprobated. The best of all the roots is thus sacrificed, and, were they intended only for firing, less pains could not be taken. Every plant should have the earth removed from around it for a circumference which will take in at least the greater part of its smallest rootlets; and when these are loosened, so as to be seen, they should be gathered up out of the way of damage, before any more soil is taken out. A large ball of earth is by no means necessary in the autumnal removal, provided a good number of fibres are preserved. On this the successful result of all planting must mainly depend; and, as we have shown the necessity of moisture to the existence of the spongelets, it will be hardly required to insist on keeping them from the effects of drought. No unnecessary time should elapse between the taking up and final placing of each plant, and, if any distance has to be traversed, the roots should be carefully enveloped in some material that will guard them from drying. The ground destined to receive them being previously prepared, by trenching and such additions as may be essential to the welfare of its occupants, the holes to receive each should be made of such depth, that the neck of the stem may stand a little above the general level of the earth around; or, if the soil is naturally shallow and laying near to gravel or clay, it is advisable, with fruit-bearing trees especially, to elevate them on a mound of earth, standing a foot or more above the surrounding soil. This, as a matter of course, increases the depth of useful earth, and in after seasons the mounds may be increased in size, to meet the requirements of the trees; and, by reason of the roots being so kept within the influence of the sun, a state of fruitfulness is brought on at an earlier period than would be the case were they buried in the usual manner. The especial care advised to be taken of the roots in lifting the plants, will all be thrown away unless the same attention is extended to them in their replanting. The tap-root, and others that may have been injured, being cut smoothly over, the remainder should be regularly spread out as near the surface as may be prudent, and the spaces between evenly filled with the earth; the surface may be moderately trodden, to give it the required solidity; and the fastening of the trunk to proper stakes will complete the operation.

DESCRIPTIVE LIST OF NEW PLANTS.

BALVISIEÆ (Br.)—NAPOLEONEÆ (Endl.)—*Monadelphia Decandria.*

Napoleona imperialis (Palisot de Beauvois). A more than ordinary interest has attached to this plant, arising partly from the circumstances under which the species was discovered, and partly from its name, given in honour of one of the most remarkable men that ever lived, and still more perhaps, from the singular structure and colour of the flower, as exhibited in the figure of the Baron Palisot de Beauvois,—so remarkable, indeed, that doubts have been expressed of the very existence of the plant.

In 1843, Mr. Whitfield returned from one of his many voyages of natural history research to Sierra Leone, and brought with him both living and dried specimens of *Napoleona*, the latter of which, after a most careful investigation, Dr. Lindley concludes to be identical with Beauvois's plant, and I think with justice; for though, when recent, these flowers are described by Mr. Whitfield to be "apricot-coloured and crimson," yet the same traveller remarks, that, when decaying, they assume a bluish tint, which will account for their colour as described by Beauvois. At length, in 1848, one of the living plants, brought home by Mr.

Whitfield, and purchased by His Grace the late Duke of Northumberland, produced perfect flowers in the month of May. —*Bot. Mag.* 4387.

The plant is now pretty well known. The flower, as it may be described in popular terms, consists of a five-parted calyx, next to which the outer series of the corolla occurs; this is apricot-coloured, stained with deep crimson at the base, and assumes nearly the form of a saucer, being about two inches in diameter: the margin is divided into many slightly-toothed segments. The next series is a whorl of narrow, yellowish-green filaments, which give to the flower somewhat the appearance of a passion-flower. These are succeeded by two other series of filaments, or stamens, the points of which bend over and are closely inflexed, and thus look like a double corona or crown, of the same rich yellowish tint as the outer portion. The interior of these is occupied by the five rays of the stigma. They are produced solitary, in the axils of the leaves, upon the recent wood.

AROIDEÆ.—*Monœcia Monandria.*

Arisæma Murrayi (Hooker), syn. *Arum Murrayi* (Graham). Few of the *Aroideæ* are more worthy of cultivation than the present, of which tubers were sent to us from Bombay, by our valued friend, Mr. Law, of Tanna, who observes, that he has frequently met with it in the valleys of the Bahdsa Hills, to the south-west of Surat. Reared in the stove, it sends up, in early spring, first the very delicate inflorescence, and afterwards the leaves. The tubers are about the size of potatoes; the scape about a foot long, terminated above by a very delicate and handsome spatha, which has its lower half green, and convolute into a tube; the upper half of the most delicate white, with a red ring round the mouth, ovate, convex, inclined over the mouth, faintly striated, and terminated by a very narrow, twisted point. Spadix subulate, longer than the tube of the spatha, but much shorter than the entire spatha, flexuose, the upper half naked, the lower clothed with flowers, of which the lower portion consists of pistils, rather crowded. Above the pistils, the spadix is occupied by numerous filaments, terminated with a whorl of three or four globose anthers; and above these, at the base of the naked portion of the spadix, are a few abortive pistils. The leaf appears after the flower, and is borne upon a long, terete petiole, peltate and deeply cut into five or six ovato-lanceolate, acuminate segments, each closely penninerved; and there is a vein or nerve running along within the margin.—*Bot. Mag.* 4388.

BORAGINACEÆ.—*Pentandria Monogynia.*

Lithospermum canescens (Lehmann). *Batschia* and *Lithospermum* are now generally considered to be one and the same genus. The present species is peculiar to North America, but has rather an extensive range, from Canada and the Saskatchawan, in the north, to Carolina, in the south. Although a perfectly hardy plant, and well worthy of a place in every garden, it has only lately been introduced by Edward Leeds, Esq., of Manchester, through Mr. Goldie. It has erect, herbaceous stems, a span or more long, simple or only slightly branched above, which spring from the crown of the root. The leaves are alternate, sessile, oblong lanceolate, canescent, with closely pressed, compact hairs; bracteas or floral leaves resembling them. Flowers in leafy, secund racemes. The corolla is large (for the genus), golden coloured; tube infundibuliform; limb of five spreading, rounded segments.—*Bot. Mag.* 4389.

On a dry, sunny bank, where few other plants will thrive, this pretty perennial will flourish, and in rockwork makes a very good appearance. That of Mr. Leeds sent up seventeen stems, and exhibited a fine show of flowers.—*Pax. Mag. Bot.*

GESNERIACEÆ.—*Didynamia Gymnospermia.*

Episcia bicolor (Hooker). A very pretty gesneriaceous plant, raised from seeds sent from New Grenada by our collector, Mr. Purdie. It blooms in the stove, and continues throwing up flowers for several weeks in succession, many growing together among the ample dark foliage, and of white colour, bordered with purple. It is a perennial, herbaceous, and somewhat creeping, as well as procumbent plant, with very short, hairy stems; its leaves are large, hairy, between ovate and cordate, acute, with large serratures all round, penninerved and coarsely reticulated. Peduncles from the axils of the leaves, simple or bi-trifid and bracheated, slender, hairy, or rather hispid. Flowers erect or inclined; calyx of five deeply-cleft, narrow, hairy sepals; corolla, with the tube, rather short, white, gibbous on one side at the base, dilated above, tumid beneath, within spotted with purple; the mouth oblique; the limb rather large, of five nearly equal, deep lobes, white, with a broad purple border.—*Bot. Mag.* 4390.

LEGUMINOSÆ.—*Decandria Monogynia.*

Burtonia pulchella (Meisn.) Messrs. Lucombe and Pince have had the good fortune to raise three beautiful species of *Burtonia*, from Mr. Drummond's Swan river seeds. One is the *B. conferta*, a second is the charming species here described, and the third is *B. villosa*, which, as we shall have the opportunity of showing, is neither inferior in size nor in richness of colour in the flowers to the present one. *B. pulchella* forms a graceful shrub, about two feet high, with slender branches, heath-like leaves, and the flowers copious and large, terminate the ramifications; the calyx is campanulate, obscurely two lipped, green, spotted with brown; the upper lip two-, the lower three-lobed; the flowers are large and very beautiful; vexillum broad, rich purple, with a yellow spot at the base of the lamina. *Alæ* and vexillum deep puce colour.—*Bot. Mag.* 4392.

GESNERIACEÆ.—*Didynamia Angiospermia.*

Mitraria coccinea. This is a most ornamental shrub, having the habit of *Columnea.* It is a native of San Carlos de Chiloe, and was introduced by Messrs. Veitch and Son, who received it from their collector Mr. Lobb, and in whose nursery it flowered in May last. The plant seems likely to prove a valuable acquisition to our gardens; its habit is scandent, and it appears to grow about the height of three or four feet; the leaves are small and neat, and the flowers of a vivid scarlet, hanging gracefully on long slender peduncles from the axils of the leaves, give it, when in bloom, a more than ordinary share of attraction; and what is not the least valuable and remarkable is, that it will very probably prove perfectly hardy, being the only member known of this extensive and very ornamental order that will endure the open air of this country. The leaves are opposite, ovate, acute;

peduncles about two inches long; bracts mitre-shaped, covering the five parted calyx; corolla of a brilliant scarlet; tube ventricose, an inch and a half long; limb bilabiate, upper lip with two rounded lobes, lower lip three lobed; lobes smaller than the upper ones; stamens four, exserted.—*Pax. Mag. Bot.*

ORCHIDACEÆ.—*Gynandria Monandria.*

Cirrhopetalum fimbriatum (Lindley). A rare and lovely plant sent by J. E. Law, Esq., to the Royal Gardens from Bombay, where it is said to be by no means common, growing on ayeen trees about Parr and the Rotunda Ghaut. Attached to masses of sphagnum, and suspended from a rafter of the orchideous house, it bears its most curious flowers copiously in April and May. The flower scape proceeds from the base of the bulbs, is erect, a span long, slender, and bracteated, bearing an umbel of spreading flowers, which are very curious in structure, and well worthy inspection with a microscope. The greater portion of the flower is constituted by the two lateral sepals, which stand forward, are nearly two inches long, linear, or linear-spathulate, acute, combined by their inner edges; the other parts of the flower are in comparison minute. The remaining or superior sepals, and the petals, are ovate, suddenly tapering into a subulate point, red, and elegantly fringed. Lip red, tongue-shaped, thick and fleshy, the upper half reflexed; column with two subulate horns at the upper anterior angles.—*Bot. Mag.*, 4391.

NEXT SEASON'S SUPPLY OF BEDDING PLANTS.

How to prepare and preserve an efficient supply of plants for filling the flower-beds next year, is just now a matter occupying a good deal of the gardener's attention. There are few who really delight in the pursuit, but will desire some improvement either in the general character of their charge, or in the details which contribute towards it; and among those who meet with the greatest measure of success, it is most likely we shall find the strongest desire to improve. The present is the best time for determining what shall be attempted in furtherance of this desired advance; by this time an opportunity will have occurred to definitely settle the pretensions of every plant to the situation it occupies—its suitability or unfitness will have become apparent. The majority are now in their best order, and it is therefore easy to make the necessary arrangements which shall direct the planting of another year. It is essential that the leading features of every contemplated change should be positively settled now, that due provision of the required plants may be made, otherwise the operator may find his plans thwarted, just when he thinks to put them in force, by the absence of particular kinds, which might easily have been provided had they been thought of in season; while he is, at the same time, burthened with an excess of some others, not at all suited to his intentions. And, as a man's memory may prove deceptive in the course of six months, I would advise the aid of a drawing, which, however rough, will recall to mind the exact position of every colour, and the particular kind of plant bearing it, in either the old or new arrangement.

This part of the affair having received the consideration due to it, we have then only to calculate the number of each species required for the next filling of the beds, and at once set about their preparation. In the average of seasons, I fancy the first week of September to be the very best time for propagating nearly all kinds of bedding plants; we have then about a month of fair weather to expect, which is just long enough to get the cuttings well rooted before they require any nursing; and, as my winter stock is seldom indulged with repotting before the spring, I have them in October with roots which fill the pots, and little or no new wood about the plants,—two points which I conceive to be of the first importance towards their well-being through the winter. There is then no encouragement for insects, and nothing on which mildew may make a permament lodgement. The details of my management are in themselves very simple, and, being directed towards the end just named, are readily explained. With verbenas I always depend upon cuttings, as the layers are likely to begin growing in autumn, or as soon as they become established in the pots. Besides, they require so much more space; and, as a good supply of autumn-struck plants is of the first consequence for filling the beds early in spring, I seldom strike many in March, preferring greatly the older plants. These considerations lead me to place about a dozen cuttings in a four-inch pot, and thus let them remain throughout the winter, the pot being nearly filled with leaf-mould and loam, and the surface covered with sand. They root freely in a cold frame, generally occupying about a fortnight, after which they stand in a sunny place out of doors till it becomes necessary to guard them from frosts; a shelf, suspended from the roof of the greenhouse, then receives them, and here they stand, close to the glass, and in a strong current of air when the house is ventilated, perfectly safe till the following March, when they are topped and repotted; after which they are encouraged to grow in a close frame or pit, and so make large, strong plants, to turn out in May. The losses seldom average a tenth, and this success I attribute to the ripening of the young plants in autumn, or rather to the prevention of new growths at that time, and their indurated condition in winter, induced by the strong light and abundance of air received in the position described.

Petunias require precisely the same treatment; and, as these plants are very liable to injury from mildew, particular care should be taken to afford them plenty of air. In the event of a choice variety being attacked, however, the remedy is of an opposite character; it should be placed in a gentle heat, and, though the bottom may be quite dead, the points of the branches will grow, and may then be taken off and struck. The young plants so obtained must be continued in heat, and require much nursing.

Very useful, vigorous plants may be obtained by sowing a panful of seed at the time the cuttings are put in. These come up in a month, and remain small till about February, when a very little stimulus will set them into a most active growth.

Shrubby calceolarias can only be provided in quantity by securing cuttings now; the lateral shoots of two or three inches in length are the best, and these should be set rather thickly into a pan of sandy loam. It is probable they will not strike till the following spring, but a shelf like that of the verbenas keeps them in good health; and, as soon as the sun's influence is felt, they start into a rapid growth, and may then be separated and encouraged. To attempt their propagation to any extent by means of spring cuttings is quite useless; they seem to require two or three months to form even a callus to the stem, independent of the time taken up in the growth of roots.

Of scarlet geraniums there should be several sizes; the tops and lateral branches of old plants, struck now by placing three or four together in small pots, form nice little plants by the spring, if they are not drawn in winter, while their parents, being taken up in October and carefully nursed, without pruning, will afford some large specimens for filling the backs of beds and the middle of large masses. Neither one nor the other should feel the knife in the dull season; for, if the old plants are cut then, they are immediately attacked by mildew on the wounded part, and the gradual but certain loss of the plant ensues. As regards the young plants, though they suffer less in this respect, the removal of the points of their shoots throws them back in flowering full a month, and thus I would rather turn out long-legged plants, which may be laid down, and will soon become furnished with new leaves and branches, and are certain to begin blooming at once, than have shorter specimens, which require half the summer to get them into a flowering state.

Fuchsias should always be provided in autumn. An examination of the plants should be taken in hand without delay; and, wherever growing shoots can be obtained, of a few inches in length, they should be taken off with a heel, and struck in sandy peat, and ultimately may be potted separately, or allowed to stand in the manner of geraniums. Such plants as these should never be stopped, that is, their terminal shoots should be preserved entire; or, when placed in the open ground, they assume a dwarfed appearance, by no means so elegant as a pyramidal shape, nor so well calculated to exhibit the flowers.

Hydrangeas, gaillardias, bouvardias, and such other things, are all better when struck in autumn; and, in fact, where convenience for striking cuttings and nursing the young plants in spring is at all limited, it is decidedly preferable to depend mainly upon those preserved through the winter; though, where the means are at hand, it must be admitted that there are some which form neater specimens from spring cuttings, as the dwarf lobelias, cupheas, penstemons, and a few others are of this class; but, as we must provide parents for even these cuttings, I would advise an immediate endeavour to provide an ample supply of everything likely to be wanting in the next year's stock of bedding plants.

Rainham. F. S. SHEEN.

MIGNONETTE FOR THE WINTER.

THOSE who desire to have healthy and handsome mignonette in the winter and spring months, should be reminded to provide it at once. The great point in the production of this plant at the time mentioned, is to have the specimens thoroughly well-rooted and firmly established in the pots before the dull weather sets in. The requisite number of pots should be prepared without delay; drain them well and fill to the brim with turfy loam and leaf-mould; level the surface, and sprinkle the seed thinly over it; press it down, but do not cover the seed at all. The pots may be placed in a cold frame or some warm part of the garden; and, with ordinary attention to watering, the seed will vegetate in about a fortnight.

When the plants have grown half an inch high, they should be thinned, leaving only three or four in each pot; and from this time onward through the autumn they should be fully exposed to the air, so as to have their growths thoroughly matured as they are produced; it is only the weak, unripened shoots that fall victims to damp and mildew: and if the plants are grown in the hardy manner described, there will be little trouble with them subsequently. The first blooms produced by the principal stems should be picked off: this encourages the development of the side shoots, and consequently increases the number of flowers, and thus their value is greatly increased.

Early in October it will be necessary to place them in frames as a precautionary measure against frost, but in the daytime and at night when the weather is warm the lights may be removed altogether, till in November the increasing wet and cold render it advisable to take them to the greenhouse or sitting-room ; here they will begin to develope their flowers, and with careful watering will continue in beauty throughout the spring.

It is essential to grow the plants in rather retentive soil, and hence the reason that loam is recommended, because in winter frequent applications of water are always injurious. The less that is employed, so long as the plants do not shrink, the better for them ; as when, from the porous character of light soils, it becomes necessary to give water frequently, it will be found that the neck of the stem is attacked with mildew, and this speedily carries off the plant. H.

CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS. SEPTEMBER.

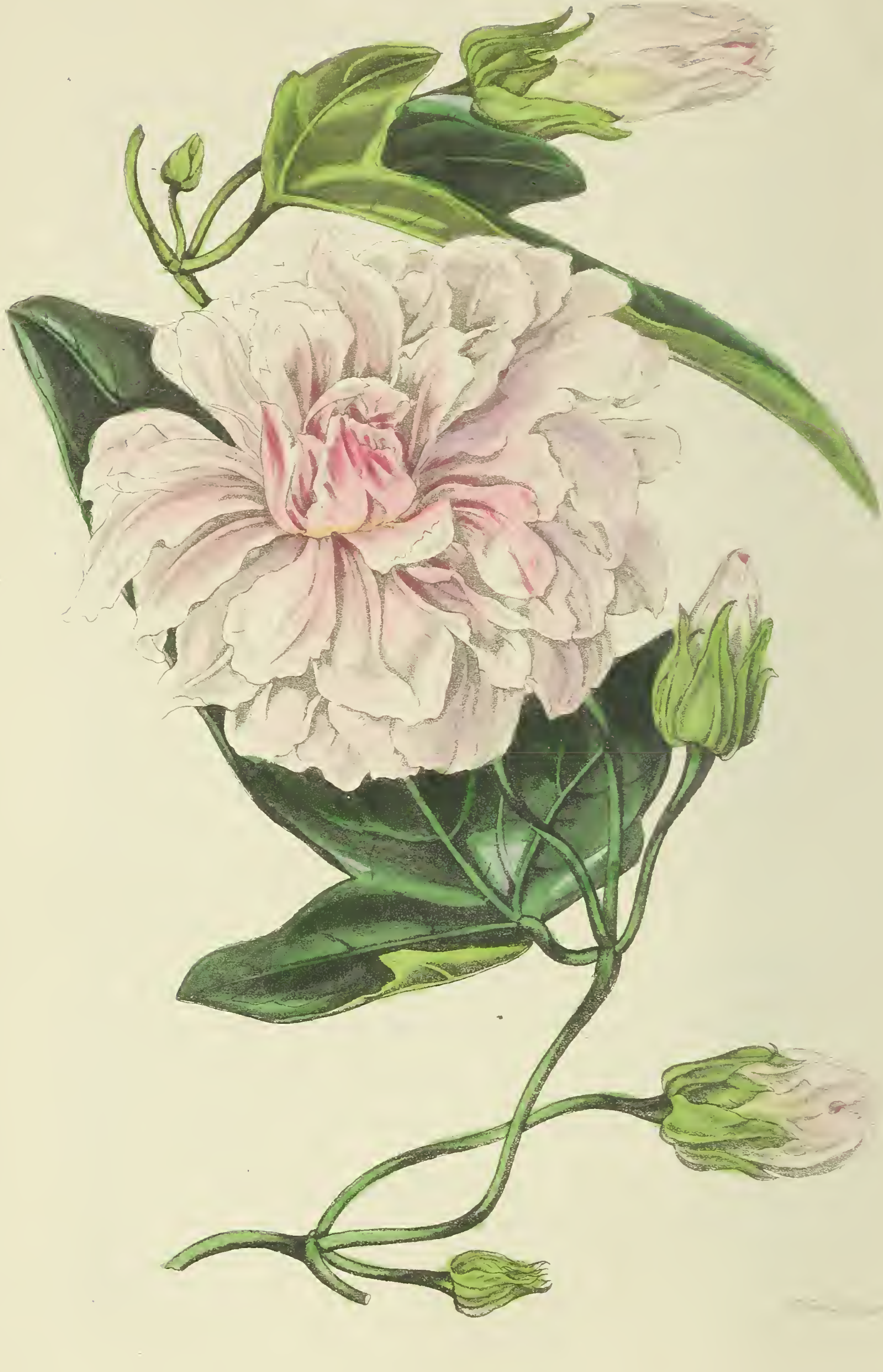
Fruit Garden. The nailing and training of wall and espalier trees being pretty well completed, the comparative leisure afforded should be taken advantage of whenever new plantations are contemplated, and the ground got ready for the reception of the trees; the mode of preparing will, of course, vary with the quality of the soil. Heavy land, inclining to clay, should be first well drained, and subsequently trenched, turning in at the same time a good coat of sand ; that of an opposite character should be assisted with manure or loam, and where it is but shallow much benefit will be conferred on the plants by throwing it into large mounds where the trees are to stand. In preparing borders for wall trees, if any suspicion attaches to the subsoil, it will be worth the trouble to pave the bottom with large flagstones, to prevent the descent of the roots. Under all circumstances, this work, if of any extent, should be expedited as much as possible, for next month is a busy time. Protect ripe wall fruit from birds, as before directed, and to prevent bruising among such as fall, it is well to have a net extending the length of the tree, one side being fastened to the wall, and the outer one supported by stakes. Gather early apples and pears, filberts, quinces, and all ripe fruit as required.

Forcing Garden. Continue the general treatment of last month as regards the admission of air to ripe grapes and other fruits arriving at perfection, taking advantage of every fine day, but being careful to exclude damp of any kind. If the succession pines were not shifted last month, no time should be lost in completing the operation; fruiting plants should have a brisk steady heat maintained about them. The peach-house may be thrown open as soon as the young wood is thoroughly matured, and by the end of the month the trees may be loosened from their supports and well cleaned; pruning had better be deferred for the present. Cherries, figs, raspberries, &c., in pots and tubs, which have been forced, or are intended for the purpose, should be shifted or top-dressed as occasion may require.

Cucumbers and melons require much attention to keep them healthy, in consequence of the continued dull weather; a lively heat in the beds is most essential, and to secure it, the linings must be turned and newly-made as the temperature of the frames is found to decline. Water very cautiously, even among growing plants; the ripening crops of melons will not require any, unless very hot weather ensue; such of the fruit as will not come to perfection may be cut green for preserving. Attend to the potted strawberry plants in hot weather; they must not suffer from drought.

A few French beans may be sown near the end of the month, to furnish a dish about Christmas. Provide as many eight-inch pots as there will be room to accommodate, drain, and half fill them with fibrous loam; sow five or six beans in each, and set the pots in a cold frame. They will require to be treated with plenty of air at first; but, as soon as dull weather occurs, must be taken to the stove.

Rhubarb for the winter supply should be potted or prepared for placing in heat, and the first crop of seacale should be covered towards the end of the month. Begin to sow small salads, to be raised in heat.



CALYSTEGIA PUBESCENS

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CONVOLVULACEÆ.

WITH A FIGURE OF CALYSTEGIA PUBESCENS.

ALTHOUGH the subject of our present plate leads us to notice the natural order of which it forms part, and, by extending our remarks over the several beautiful genera which compose it, increase the interest and utility of this paper, it is necessary to explain that the *Calystegia pubescens* can hardly be regarded as an illustration of that order, for it is a complete anomaly among its congeners, being the only convolvulaceous plant yet known to produce double flowers, the leading features of the more prominent genera being their showy funnel-shaped blossoms; and the possibility of a really double flowering plant existing in the order, was perhaps never thought of till it was actually in our possession; however, wonders crowd so fast upon the attentive observer of animate and inanimate nature, in these days of research and discovery, that we cease to be astonished, and turn with admiration from one strange form to another still more new.

The order under consideration formerly contained nine genera distinguished as *Convolvulaceæ genuinæ,* and three others forming the sub-order *Hydroleæ ;* those of the primary section have been extended by the divisions of modern botanists, and by introductions to twenty genera, while the secondary group have been elevated to the position of a distinct order. So that Convolvulaceæ is now composed of *Aniseia, Argyreia, Batatas, Breweria, Calonyction, Calystegia, Convolvulus, Cressa, Evolvulus, Exogonium, Ipomæa, Leptocallis, Mina, Pharbitis, Porana, Quamoclit, Rhodoriza, Rivea, Shutereia,* and *Skinneria.* They are for the most part derived from the East Indies and South America: in the latter country they are most abundant, fringing the jungles and woody places with their twining stems, and imparting an indescribable charm with their brilliant though evanescent flowers, in the manner that our native species of Calystegia or bear-bind may be seen festooning the hedge-rows and wild spots of our island.

Aniseia is a small genus of two species, *calycina* and *salicifolia*;

both having white flowers, the first a native of the East Indies, and the latter of St. Domingo; they were formerly included in the genus *Ipomæa*, from the members of which they are abundantly distinguished by their more shrubby character. They require stove treatment, and will be found to succeed in peat and loam.

Argyreia, or silver-weed, is a larger genus containing twelve species, all of them stove climbers with handsome rose, red, or purple flowers, whose colours are greatly enriched by the silvery appearance of the leaves and branches arising from the presence of a fine downy tomentum; they are entirely natives of the East Indies, and a considerable part used to be included in *Ipomæa*, the remainder being considered *Lettsomias*. The most beautiful are *splendens*, rose, a winter-flowering species; *speciosa*, purple; *argentea*, pink; *cuneata*, dark purple; and *Roxburghii*, rose; a mixture of peat and loam, with the assistance of a little bottom heat in the earlier stages of their growth, will not fail to grow them to fine specimens in the stove.

Batatas is perhaps the most important genus of the order, inasmuch as one of its species, the *B. edulis* furnishes an article of food, the sweet potato of the East, Skirrets of Peru, or Spanish potato of the West Indies; this species is cultivated in all the tropical climates, and regarded much as is our potato, the tubers being set in the ground, and its trailing stems pegged down in the earth, new tubers are plentifully formed; these were formerly imported to this country and regarded as great delicacies, and it is to this root Shakespeare and other contemporary authors allude, as the common potato (*Solanum tuberosum*) was then scarcely known in Europe. The whole of the genus are rather strong-growing stove climbers, with large and specious blossoms, which are freely produced on most, and when trained to the roof or a good-sized trellis, make a fine appearance. They require stronger soil than the preceding genera; and when the season's growth is completed, the tubers must be gradually dried and kept dormant through the winter. The best are *insignis*, purple; *bonariensis*, pink; *pentaphylla*, striped; and *paniculata*, purple.

Breweria Roxburghii is a name given by Don to the old *Ipomæa semidigyna*, a shrubby plant, with white flowers, from the East Indies, and requiring the treatment necessary with *Aniseia*.

Calonyction contains most of the night-flowering Convolvulæ; it has six species—the first, *C. speciosum,* better known as *Ipomœa bona nox,* is a stove-climbing biennial, with white flowers, opening towards the close of day; the second, *C. Roxburghii,* syn. *Ipomœa grandiflora* or *longiflora,* is of similar habit, and has equally handsome flowers of the same colour; the third, *C. muricatum,* syn. *Ip. muricata,* is a stove-climbing annual, with purple blossoms; the fourth, *C. pseudomuricatum,* is a shrubby plant, also bearing purple flowers; the fifth, *C. grandiflorum,* or *Convolvulus grandiflorum,* used to be a great favourite in the collections of our ancestors; its large white flowers, fully displayed in the evening, being much admired; and the last, *C. noctolucum,* syn. *Ip. noctoluca,* or the true night-flowering Convolvulus, was generally associated with it: this also has white flowers, which expand in the afternoon. All this genus delights in a light, rich soil, with abundance of moisture and an elevated temperature while growing; but, when the season's action ceases, they must be kept cooler and drier; indeed, the tuberose-rooted kinds should be reduced to a dormant state, as recommended for Batatas.

Calystegia. This genus is very closely allied to Convolvulus, being only distinguished by the presence of bracteæ inclosing the calyx, and by its capsule being one-seeded. There are twelve species, two of which, *sepium* and *soldanella,* are natives of Britain. The first, popularly known as the great bear-bind, is one of our commonest plants, flourishing in neglected hedges or among the bushes beside some stagnant ditch; the other is only found on sea-shores,—it is a much smaller plant, and has flesh-coloured blossoms. *C. sepium* has a pale, rose-coloured variety, called *incarnata,* which, with the new and handsome *C. pubescens,* may be termed the only ornamental portion of the genus. *Incarnata* was obtained from North America a considerable time back, but, from neglect, has become exceedingly scarce, which is to be regretted, as it is intrinsically beautiful; and hardy, climbing plants which produce a display of flowers are things by no means too common. A character of this kind attaches to the *C. pubescens,* a recent introduction of the Horticultural Society, through their collector, Mr. Fortune, who found it in China; and, being liberally distributed from the Society's garden two years since, and easy of increase, it has become very generally adopted. Our plate, though an accurate representation of so much of the plant as it will contain, fails to convey an idea of the beauty of an entire specimen; for this is one of those plants, which, failing to arrest attention by the splendour of their individual blossoms, yet excite our strongest admiration when viewed as a whole,—what a single flower fails to secure, forty or fifty collected almost to touching may claim as a right.

We have been anticipated in any cultural remarks applicable to this plant by a Correspondent, with whose directions our experience entirely coincides. We find the plant to grow luxuriantly in rich loamy soil, in the open air, where also it flowers with the greatest possible freedom, and throughout the summer is among the gayest climbers we possess. Nor can there be much doubt of the perfect hardihood of the plant, when we consider both the nature of the plant, and that of the climate from whence it was obtained. The annual character of the stems, however, afford every facility for protecting the roots in winter, even should they require it, and we may consequently include it among the best means yet known for ornamenting walls, arbours, or trellis in the open air, through the summer months. Cultivated as a pot-plant, and trained to a wire frame, it is by no means inferior to many which entail a much greater amount of care and skill, as its delicately tinted blossoms are produced so copiously, as to render the plant conspicuous in whatever position it is seen. But, in our opinion, the station in which it will prove pre-eminently useful is, for covering the framework of balconies. Those who have ever had occasion to attempt the furnishing of such places with flowering plants, will know the trouble invariably experienced to get any plants to thrive that are sufficiently large in their growth to make an appearance before they are destroyed by heat unmitigated and drought extreme, especially when the best supply of food that can be offered the roots is contained in a narrow box. In such a place, however, we entertain but little doubt of the *C. pubescens* succeeding; and, in the event of this idea proving correct, an invaluable addition will be made to our means of ornamenting the fronts of suburban residences.

Convolvulus. This is an extensive genus of some beauty, containing plants of a wide geographic range, chiefly, however, inhabitants of temperate regions, though a few are derived from the tropics. They are mostly climbing plants, yet a few have a trailing or herbaceous habit, and a still smaller number assume a shrubby character.

The species number nearly sixty, and to facilitate their description, we shall separate them into three classes, the hardy kinds, or such as flourish in our climate without protection; the greenhouse kinds, and such as require to be grown in a stove. In the first section there are ten annual species, the type of which may be found in the *C. tricolor*, or *C. minor*, as it is more generally called; this is extensively cultivated, and probably, were the others better known, they would receive equal attention: they are—*siculus*, blue; *pseudo-ciculus*, white; *meonanthus*, blue and yellow; *strictus*, rose; *pentapetaloides*, blue; *undulatus*, white and red; *Forskœlii*, blue; *aquaticus*, white; *guianensis*, blush: the last two climbers, and *tricolor* blue and yellow; these only require to be sown in the open border where they are to flower. The hardy perennial species are seldom seen, though they include some really handsome, free-flowering plants. There are eighteen or twenty of this class, part are of scandent habit, among the most beautiful of which may be mentioned *chinensis*, pink; *Malcolmi*, white; *hirsutus*, purple and yellow; and *emarginatus*, reddish purple. Of those distinguished by a more restricted growth, perhaps some of the following might be added with advantage to the best of ordinary collections of hardy herbaceous plants:—*persicus*, white; *Sibthorpi*, blush; *saxatilis*, blush; *dorycnium*, rose; *holosericeus*, striped; *terrestris*, white; *imperati*, striped; and *Cantabricus*, pale red: they are all, or nearly all, readily increased from seed, and will grow in any soil, so that it appears an extraordinary thing that they have not been more generally adopted.

The greenhouse species are certainly eclipsed by their more specious allies, the Ipomæas, yet such plants as *floridus*, blush; *linearis*, white and red; *lanatus*, white; and *multifidus*, blush; are surely worth a place among the usual herbaceous occupants of the erection, while the climbers will not be disgraced by the admission of species like *erubescens*, blush; *bonariensis*, striped; *farinosus*, blush; or *canariensis*, pink; the plants of this class are mostly moderate climbers suitable for the bases of pillars, the bottom part of walls, or to be grown in pots, and supported by rather large wire frames. They delight in rich friable loam, and should be frequently syringed while growing, to prevent the lodgement of red spider, and to otherwise assist the healthy development of leaves and flowers.

Among the stove species, the most remarkable is the lovely *pentanthus*, with its brilliant blue flowers, *ciliatus*, with its curious fringed leaves, and delicate rose-coloured blossoms, and the noble *quinquefolius* producing flowers of a pure white and purple: these require a brisk growing heat, with plenty of moisture in the active season, and a decided rest in winter. They may be stationed in the same manner as the greenhouse kinds, though the last named is of much stronger habit than any other.

The genus *Cressa* has only one species, *C. cretica*, a hardy annual with white flowers, less beautiful than most other members of the order.

Evolvulus is composed principally of tender annuals, having handsome brilliant blue flowers; they should be sown early in spring, and subsequently treated as is usual with plants of the same description. The perennial species are adapted for pot-culture; they have a climbing habit of moderate extent, and look well on wire trellis.

Exogonium is a small genus, but important, as it contains the plant furnishing the medicinal drug jalap. For a long time an erroneous impression prevailed, that it was obtained from the *Ipomœa machroriza*, but Scheide, the botanical traveller, from personal examination, verified by other persons engaged in the trade of that article, proved that it was obtained, not from the hot plains around Vera Cruz, where the Ipomæa is abundant, but from the more elevated and cooler districts near Jalapa, and that the plant which yields it is the *Exogonium purga*. It has been cultivated in England since 1838, and, independent of its interest in the above respect, is well worth attention for its intrinsic beauty. The stems rise from a roundish tuber, and extend ten or twelve feet; the flowers, which are freely produced, are about the size of those on the *Convolvulus minor*, or rather larger, of a rich purplish-red, gradually becoming paler towards the throat. The other species are *filiforme* and *repandum*, both formerly included in *Ipomœa*; the first has a slender habit and purple flowers, the second is of more vigorous growth, and has rich reddish-scarlet blossoms; they require to be grown in the stove with the treatment of tuberous *Ipomœas,* but while in flower should stand in the greenhouse,

Ipomœa. This is, at the same time, the most extensive and beautiful genus of the order; it contains near a hundred species, among which are hardy and half-hardy annuals, greenhouse and stove plants, both shrubby and climbing kinds; the latter form is most usual, and from the varied treatment required under cultivation, it may be readily conjectured that they are found in numerous countries; all the warmer parts of Asia and America abound with them, and some are found in Europe and Africa. *I.tamnifolia, atropurpurea, leucantha, siberica,* and *lacunosa,* are hardy-climbing annuals, handsome, and easy of culture *I. sessiliflora,* rose; *campanulata,* purple and white; *violacea,* dark purple; and *rŭbro cœrulea,* blue, tinged with red, are tender annuals: the last is well known, and highly esteemed as an ornament for the greenhouse in summer. The seed of these kinds should be sown in March, not earlier, in pans of light rich earth, plunged into a brisk bottom-heat, and when the young plants are two or three inches high, they should be potted separately, and continued in heat that a free development may ensue, for if any check is experienced at this time, they commence flowering, and never afterwards grow freely; such therefore as happen to produce a terminal spike of flowers, may be thrown away, as they never grow larger: this is no uncommon occurrence with very early plants, and therefore March is recommended in preference to the previous months. They should be duly shifted into larger pots, as their progress may seem to advise, and being well established on supporting frames, by the end of May are then fit to be brought into the greenhouse, where they continue to blossom throughout the summer, care being taken to keep them clear of insects, by frequent syringing and fumigating; a slight shade should be introduced between them and the sun, to preserve the brilliancy of their otherwise short-lived flowers, which, with a moderately damp atmosphere, will go far to preserve them from attacks of red spider, to which the entire order is very subject.

(*To be continued.*)

GLORIOSA SUPERBA.

This curious and truly splendid plant is just now obtaining the attention it so well deserves at the hands of all who would be considered accomplished growers of plants. It is one which, if properly cultivated, must ever attract much notice, and as there is some little tact or skill required to have it in good order, it is precisely the kind of thing that should be adopted by those who are in the habit of exhibiting their productions. For the benefit of those not acquainted with the plant, and I am sorry to say there are a great number even of gardeners to whom it is but little known, I will attempt a brief description in popular terms: the plant is a native of the East Indies, whence it was originally introduced so far back as 1690, but from the difficulty of increasing it, and perhaps want of skill in its management in those early days, it remained an extremely scarce plant till within a comparatively few years; it has a tuberose root, irregular in form, covered with a pale brown skin, like that of the potato, and also like that root, this has eyes from whence the stalks issue; they are usually collected at one end as is the case with the well-known ash-leaf kidney potato, and on the preservation of this portion of the tuber particularly depends the existence of the plant. I have known it survive the complete decay of other portions, but if once these incipient buds are injured it is seldom they recover. From the eyes just described, the stem of the plant springs; it is succulent, and of a scandent habit, bearing, at rather distant intervals, long, narrow, pale green leaves, resembling those of some species of lilies; when this stem has advanced from five to ten feet in length, it pushes forth lateral branches, which are numerous in proportion to the strength of the main stem, and upon them are borne other leaves, having a cirrhiferous point or tendril by which the plant seeks to support itself: from the axils of these leaves the flowers proceed. The footstalk is from three to four inches long, dependent towards the end; the petals as they expand turn upwards and become wavy or twisted; they are about three inches long, and, in fine flowers, nearly half as much in width, but being spirally curled they do not look so wide; at first they are yellowish-green, but as the flower comes to maturity they assume a brilliant yellow tint, shaded and barred with orange and red, the tips retaining the green colour. The remarkable stamens and their anthers spread themselves out in a lateral direction beneath the petals, and thus the full blown flower is in form somewhat like that of a cyclamen or Japan lily, though the upper portion of the flower is more closely collected into an erect position, and altogether it is one of the most extraordinary as well as beautiful blossoms that can be imagined; they are produced, too, so copiously as to render the whole plant truly gorgeous in appearance. Like most tropical plants it requires a very decided treatment; there must be a positive difference in the seasons of activity and rest, for half and half measures or a continuous course of treatment would inevitably end in its entire dissolution. To take the plant at this season, we shall find the majority just sinking into a dormant condition, the stems are withering, and in a week or two will be gone: this ripening process must be encouraged by all means, and to forward it as much as possible, the pots should be stationed where the sun may act on them as well as the plant, and by withholding water, we shall have the roots in a mature state by the end of the month; the stems are then to be cut down, and the pot with the tubers undisturbed should be put away in a perfectly dry part of the stove, as a top shelf, or beneath the bark bed, if that happens to have a space beneath that which is not subject to drips; in short, any place in which they can be kept dry and cool will suit, but they should not be removed from the soil in which they grew, or taken from the stove. In this state they are to remain, part of the roots till February, and the remainder till March or April, according as they are desired to bloom; about four months is occupied in the growth of the plant, and therefore it is easy to start them if we know when they are most desired in bloom. If the plants have been previously well grown, and the roots properly kept through the winter, they will turn out of the pots sound and firm; but if symptoms of decay are observable, they should be carefully cut away, avoiding, under all circumstances, any undue attempts at separation; for though this is the only practicable mode of propagating them, it must not be done except when and where a natural inclination to separate is apparent; to otherwise break up the roots is but a fruitless waste of their strength: in this respect the previous comparison with the ash-leaf potato is most apt, for like it the Gloriosa refuses to break, except from the primary eyes collected at the end, and though indentations may be visible in other parts they are usually abortive, and are never to be depended on. The soil in which the tubers are to be planted should be a mixture of light rich loam, and if it can be obtained fresh from a pasture or common of this character, it will be better than having to ameliorate it with dung, and as the loam forms the principal part of the compost, it will be well to give it the most attention: two parts of this earth, one part fibrous peat, a similar quantity of thoroughly decomposed leaf-mould, and another of sharp, clean, silver sand, will form a mass in which the roots will luxuriate. A twelve-inch pot will hold one large tuber or two or three smaller ones, and will be more convenient to start them in than larger ones. When the tubers are potted, they should be plunged into a brisk bottom heat of 85° or 90°, and there continued if possible throughout their growth; when about half grown, the plants should be shifted into larger pots, and by continuing the bottom heat with the ordinary stove temperature for the foliage and regular attention to watering, both to the upper and lower portions, it will be found the stems will advance rapidly; syringing is essential to keep the leaves clean, and should not be omitted a single morning or evening throughout the time they are growing, or red-spider will speedily destroy all promise, either of healthy plants or handsome flowers. It is preferable to allow the stems to ascend perpendicularly or in a natural manner, till they have attained their greatest height, and then to train them on a trellis in the manner most likely to exhibit the flowers to advantage, rather than cramp their development by introducing the frame at an earlier period, and in training avoid a stiff regularity which destroys the otherwise easy elegance natural to the plant. While in bloom the specimens may stand in a cool and shaded position, which will prolong their beauty, but begin to reduce their water as soon as the flowers are all expanded.

S. Brownlow.

VIOLETS.

It is a matter of regret that these interesting, fragrant, and popular flowers are not more generally seen in small greenhouses and ornamenting the sitting-room, even where the former convenience is not at hand.

They entail but little trouble, are readily increased, and occupy but little room; while, under judicious management, they may be had in bloom throughout the winter and spring months. There are now several varieties to be found in gardens; the most esteemed being generally abundant where such things are valued as they should be; but to form a complete collection of even the scented kinds, would entail a considerable deal of painstaking, untiring search; the following, however, are easily procurable, and would afford variety in colour and habit, along with the most delicious fragrance.

The best, because the most copious bloomer, is undoubtedly the tree violet, also known as the Chinese and Perpetual. It is dark blue or purple, very double, of compact neat habit, and a profuse flowerer from September to May; quite hardy, and forces well, therefore suitable alike for pots or the borders; it may be trained erect, so as to present a stem of six or eight inches, crowned with foliage and flowers, and from these circumstances it has been called the tree violet, though little importance attaches to the feature, as it is one all the varieties of *odorata* may be made to assume.

The double Russian violet resembles the preceding in colour, but is a stronger grower, forming long weak footstalks to the leaves, which give to the plant a weak straggling appearance; the flowers, also, have less fragrance, and therefore it can only be recommended for the borders; planted in rich loam it forms a large tuft, and flowers freely at an early season, continuing for several weeks later in summer than any other kind, and is much grown by those who cultivate these flowers for sale, as its blossoms will mix with those of the tree violet, and the scent of the latter is sufficient for the bunch.

The double blue Neapolitan is an excellent variety for forcing; its habit is intermediate of the two mentioned, the flowers are large, of a pale blue, and sweet; the plant is too tender for the open air, and should be confined to pot or frame culture.

The double white Neapolitan is an exquisite variety for purity of colour and fragrance, but the plant is even more difficult to manage than the blue one.

The old double blue is a very hardy plant, thriving in the open air, and displaying its flowers sparingly through the winter, unless in a very warm position, but most abundantly in spring; it is too rampant for pot-culture, but should have a place in all shaded flower beds.

The single blue perpetual is a most useful kind, which planted at the foot of a south wall, in tolerably rich and well-drained soil, will continue to flower through the whole year; it may also be potted, and if placed in a cold frame will not fail to yield a good supply of flowers even in the worst weather. It is also very fragrant.

The common blue and white are too well known as border flowers and inhabitants of our hedges and woodsides to need description; I will only remark, the white have less scent than the more common blue, but both may be potted, and will flower tolerably free through the winter, either in the greenhouse, a frame, or the sitting-room window.

Their culture should begin in April, when there will be found numerous side shoots, which taken and treated as cuttings in a close frame, root and form independent plants in two or three weeks. If a frame cannot be spared for striking them in, the old plants may be transferred to a shaded part of the garden, and being plunged into the earth, the side branches may be laid, fastening them with pegs, and just covering the thinner portion of the stem with mould, they will speedily emit roots, and in June may be transplanted to a bed of light rich earth, to remain till autumn. Those struck as previously described also require this bedding; the position chosen should be one open to the morning and evening sun, but sheltered from its greatest influence at midday; the soil should be something like that taken from the top of an old melon bed, with a third of sharp sand added; and here, with attention to watering in dry weather, they will grow rapidly, forming strong plants by the middle of September, when they may be taken up and potted or planted into a frame, the latter mode is of course only suitable when merely the flowers are required for bouquets. The soil for those placed in pots should be leaf-mould and loam in equal quantities, with sufficient sand to keep the mass porous, the object in making the mixture so strong is to prevent the necessity of frequent watering. Violets require to be constantly moist, but few plants are more impatient of frequent applications, a soil so open as to require much water necessarily dries fast, and these fluctuations it is which causes the mischief; the addition of so much loam, however, preserves the requisite humidity in the soil without incurring any risk of an opposite character. For those placed in the frame, a lighter kind of soil is necessary, because from its greater bulk, and the comparative absence of drying influence, there would exist a great probability of the loam acting injuriously if used in so large a proportion. The usual course adopted is to make up a bed of fresh leaves, or thoroughly wrought dung, of sufficient depth to ensure a continuous gentle bottom heat of about 55° or 60°, on which about nine inches of leaf-mould is spread and levelled within the frame, and the plants are stationed at a foot apart; this may be done any time till the middle of October, but the sooner the better, as then they have the best chance of becoming re-established before the winter sets in. Air must be admitted on every favorable occasion to a moderate extent, and in fine weather they will be benefited by a slight sprinkling of water; the blooms will begin to expand as soon as the plants recommence growing, and will continue while they remain healthy. Those in pots should, if possible, be assisted in a frame also till they come fairly into flower, especially if they have been removed late in the season, as they will recover themselves much quicker in the closer atmosphere of such a place than if at once taken in doors, but as soon as they become worthy the place they would occupy, it will of course be desirable to have them where most enjoyable; all the varieties bear the confinement and atmosphere of a room tolerably well, continuing in beauty for many weeks, but they must be carefully and regularly supplied with water while so situated, and their foliage kept quite clear of dust or other accumulations.

HORTULANUS.

GARDEN MECHANICS.

Allow me to describe a portable garden frame, which I have recently constructed, mainly for the protection of picotees and carnations in winter, but which is convertible to a number of useful purposes. In the course of a rather extensive practice, it has frequently occurred to me that the common frame is but an inefficient protection, especially for such half-hardy plants as are mainly injured by damp. There are a great number of valuable species lost annually, not in consequence of frost, though that is the cause usually assigned, but that have been rotted or "fogged," as it is termed, by the continued presence of stagnant damp air, and believing the ordinary cold frame, when placed on the ground, to be a prolific scource of this evil, I set about a remedy last season, which has answered admirably. The structure, which, by reason, of its suitability to nearly every purpose required, I propose to call the "florist's frame," is formed like a miniature span-roofed greenhouse, with perpendicular legs, three feet apart, and two feet six inches high, they have strong castors screwed on to the bottoms, and are there kept in their places by longitudinal ties; at twenty inches from the ground other ties running the length of the frame, are screwed into the uprights, and on them the bearers for the pots rest; these are formed of half-inch battens, three inches wide, with spaces of an inch between each, and being let into corresponding sockets or notches cut in the side tie-pieces or plates, they never get out of position; on the top of the uprights is another slight plate projecting beyond the face of the legs about two inches, to the underside of which, is hung with hinges, moveable flaps to fit between the legs and down to the floor, on which the pots stand, these form the side of the frame, and may be closed in bad weather or opened when air is required. The ends are gable-shaped, and, from the apex of each, a ridge board traverses the length of the frame, supported by slight rafters opposite each upright or leg: the lights are attached to this with hook-and-eye hinges, and they are made three feet wide to match the supports.

The plants stand on the battens, and when the frame is opened, receive as much air as though they stood in the open ground, while rain is completely thrown off. In bad weather they may be shut up as effectually as though they were in a greenhouse, and from the elevated position of the stage which bears them can never receive injury from stagnant moisture, besides which they are brought to a more convenient height for watering and examination. In summer the stage may be lowered to the bottom tie-pieces, and canvass frames being substituted for the lights, it needs only another piece of canvas or netting to be carried round the sides to make a capital place for blooming plants: or if not thus employed, the stage may be taken out, and the frame wheeled over a bed of ranunculuses, pansies, or other plants requiring protection from the sun and rain, or moved into a shaded part of the garden, it becomes most excellent summer quarters for such things as auriculas; and further, in the autumn, when not occupied by plants, seeds may be placed in it, and will dry thoroughly without the trouble usually attending the process. It is so light that when filled with pots it may be moved with ease upon a good walk, and the first cost is less than would be that of common frames having an equal area. As I was determined to have a portable affair, all the pieces are held together with screws, and the lights and flaps made to unhinge, so that the whole may be separated and stowed away when not in requisition. The legs are of ordinary quartering, planed down to about three inches and a half square, the longitudinal bearers, or tie-pieces, as I have called them, are an inch and a half thick and four inches deep, the upper plate, ridge board, and rafters of inch board, cut to a width proportionate with their several positions, and the lights are made of inch and a half stuff.

The width of the frame is four feet, and the length ten, though the size may of course be varied to suit convenience. The advantage to be obtained, must be sought in the positive freedom from damp among the plants which must ever attend such a form, and in its convertibility to other purposes when not employed as originally designed.

If simplicity be the test of usefulness, then a contrivance for supporting the flowers and foliage of hyacinths grown in glasses, lately put into our hands by Mr. Hamilton, Seedsman, of Cheapside, is surely calculated to effect its object, All who cultivate these charming flowers in glasses, and we are gratified to believe the taste for this interesting amusement is rapidly extending, must have felt equally the necessity of some support for their succulent stems, and the cumbrous unhandy character of those usually employed. They are certainly supporters of the glass, but render the plant very little assistance, for in the majority there is abundant space for a full display of all the erratic propensities of the plant, which is too frequently seen inclining so far from an upright position, as to destroy completely the neatly tasteful appearance so much to be desired.

How far Mr. Hamilton has succeeded in improving on the old forms, will be best estimated from a description of the one he now offers to the notice of lovers of these elegant spring flowers ; the charge of cumbrousness, it must be conceded, is entirely removed, for nothing can be lighter in appearance, and we presume, from the simplicity of the design, he will be able to supply them at a considerable reduction on the old prices. Perpendicular wires pass from the inside of the glass upwards to the height of the plant, they are maintained in their places by rings, forming in the neck of the glass a seat for the bulb, which is thus kept erect, and above them are other rings, which may be moved upwards as the plant advances in growth ; in the old plan the supporting wires are all fixtures, so that they cannot be adapted to the changes of either leaves or flowers. Here, however, the traversing ring, by following the development of both, keeps them always in a proper position. The appearance we consider to be much improved because less obstrusive, and there can be no doubt of an increased convenience in the little manipulations necessary during the progress of the plant, such as changing the water, &c., as the glass, hyacinth, and its support may be all turned over together with the greatest facility.

DESCRIPTIVE LIST OF NEW PLANTS.

CACTEÆ.—*Icosandria Monogynia.*

Leuchtenbergia principis (Hooker). Few persons, we think, on viewing this plant when destitute of flower, would imagine it to belong to the *Cacteæ.* The mammillæ have rather the appearance of the leaves of some aloid plant, while the stem, looking as if formed of the persistent bases of old leaves, resembles that of some *Cycadeæ.* The blossom, however, if nothing else does, betrays its real character; for it differs in no particular from that of *Cereus*. The whole habit of the plant is, however, so unlike any other cactaceous plant, that for consistency's sake, if *Cereus* and *Echinocactus* be natural and good genera, this will constitute a genus apart; and I willingly adopt a name by which this plant is said to be known on the Continent, although I have failed to find the place where any such name is recorded. Our plants were obtained for us from the neighbourhood of Rio del Monte, Mexico, through the favour of John Taylor, Esq. It flowers in the summer months. Our largest plant is a foot high, its main trunk erect, but crooked, as thick as a man's arm, clothed with the dense mass of the persistent bases of old mammillæ; above they gradually appear more perfect, at first, short and truncated, till the crown of the plant is clothed with perfectly formed mammillæ, four or five inches long, glaucous green, succulent, triangular, truncated at the apex, and there bearing six or seven long chaffy, or almost horny, linear-subulate, flexuose scales, of which the central one is about as long as the mammillæ, and the others, forming a whorl round the centre, are about two or three inches long. From near the centre of the summit of the plant the large sulphur-coloured flowers appear, solitary, from the axil of a mammillæ; they are formed of a number of imbricated, oblong, greenish scales, gradually passing upwards into longer and more coloured scales, till they spread into a long ray of numerous, yellow, acute, linear, glossy petals, giving four inches and more to the diameter of the blossom.—*Bot. Mag.* 4393.

MELASTOMACEÆ.—*Triandria Monogynia.*

Sonerilla stricta (Hooker.) This, as far as I know, is the first species of the genus that has yet been cultivated in Europe. The seeds were received by Messrs. Veitch and Son, of Exeter, from Mr. T. Lobb, who collected them in Java. Flowering specimens were sent to me in May 1848. At first sight, and especially in the leaves, this has very little the appearance of a melastomaceous plant, and the trimerous character of the flower is at variance with most of the genera.

It is an interesting little annual, with a slender, erect, branching stem, a span or more high; the leaves are small, dark green above, and red purple beneath. The flowers, of three spreading deep rose petals, are produced six to nine together on a terminal spike, and have their beauty enhanced by the large two-lobed anthers, of a bright yellow, borne on the subulate filaments of the three stamens.—*Bot. Mag.* 4394.

VERBENACEÆ.—*Didynamia Gymnospermia.*

Gmelina Rheedii (Hooker.) A large stove plant, long cultivated at Kew, but only flowered in May last. It attains in a pot fourteen or fifteen feet in height, and assumes the form of a small straggling tree; with opposite leaves of dark green on the upper side, and downy beneath. The flowers occur on a thyrsus, are large and handsome; the corolla is dark tawny yellow, paler, and very downy externally, the tube many times longer than the calyx, enlarged upwards; the limb two-lipped, spreading; upper lip of two large rounded lobes; lower of three large lobes, resembling the upper ones, except that the intermediate segment is more elongated.—*Bot. Mag.* 4395.

GESNERIACEÆ.—*Didynamia Angiospermia.*

Gloxinias, hybrid varieties. *Teuchelerii.* The flowers of this variety have the colours of its parents, not promiscuously blended together, but each in distinct alternate flakes of purple and pink, pure and bright; on the lower segment of the limb the pink becomes a deep rich crimson, extending to the throat of the tribe. This very beautiful kind was raised betwixt *G. speciosa* and *G. rubra,* by M. Joscht, gardener to Count de Thun, of Techen, Bohemia. It was introduced to this country by Messrs. Rollinson, last summer.

Albo-coccinea. The flowers are of the most pure and delicate white, relieved with a broad dash of rich crimson, extending through the lower segment of the limb quite down the tube. It appears to be a hybrid, betwixt one of the white-flowering species and *rubra,* and is certainly a very good kind. It flowered in the nursery of Messrs. Backhouse, of York, in August 1847.—*Pax. Mag. Bot.*

ACANTHACEÆ.—*Didynamia Angiospermia.*

Sericographis Ghiesbreghtiana (De Candolle). We are unacquainted with the native country of this fine species of a new genus nearly related to *Justitia.* It was introduced a few years ago into Belgium, by M. Galleotti, of Brussels, and has since found its way into several of the continental nurseries. In 1846, Messrs. Rollinson received a plant from M. Makoy, of Liege, under the name of *Aphelandra Ghiesbreghtiana*, which flowered in March last. It is a shrubby species, requiring the temperature of the stove, and produces its fine scarlet flowers on small, loose, one-sided panicles in the winter months, on this account it must be considered an acquisition. The flowers are tubular, an inch or more long, with a bilabiate limb ; the teeth of the lips blunt and equal. It requires similar treatment to that given to *Justitia*, and being a plant of vigorous growth, a good share of pot room is important.—*Pax. Mag. Bot.*

RUBIACEÆ.—*Tetandria Monogynia.*

Bouvardia Cavanillesii. A graceful, dwarf, greenhouse shrub, bearing smooth, scarlet, tubular flowers, nearly an inch and a half long, raised in the Horticultural Society's Gardens from seeds, received in January 1846 from Mr. Hartweg, who found them in Mexico. It should be treated as is usual with the red *B. triphylla.* Stunted plants flower freely from the old wood.—*Journ. Hort. Soc.*

Zauschneria Californica. Raised from seeds collected by Mr. Hartweg, in fields about Santa Cruz, in California, and received at the Horticultural Gardens May 11th, 1847. This curious plant, which it has so long been an object to obtain, proves to be a species of much horticultural interest. It forms a bushy perennial, about three feet high, and every branch emits from the axils of all the upper leaves, one horizontal bright scarlet flower, about an inch and a half long. When in bloom the plant is in appearance not much unlike a fuchsia, but the calyx tube has four stout ribs. It grows freely in any good garden soil, and is easily increased by cuttings or seeds. The seedlings flower in the first season, in the month of September, if sown in May. It is a fine hardy species, rivalling the fuchsia, and most probably will flower from June to October if planted in a dry warm situation.—*Journ. Hort. Soc.*

A FEW SHRUBS FOR FORCING.

As the resumption of power by the ice-king will shortly banish from our gardens all but the hardiest of Flora's train, and leave our choicest spots a deserted waste; we should, while yet we may, make arrangements for the reception of all those of her attendants who are willing to gratify us with an exhibition of their charms, in return for the care bestowed upon them.

If flowers are not to be had out of doors, we must adopt measures that will ensure them within, for the march of civilization has advanced so far, that flowers are no longer luxuries, they are absolute and positive necessities. There are a goodly number now in our collections which are naturally so obliging as to display their beauties at a season we most covet them; but still the horticulturist, avaricious as the most ordinary of human kind, desires more, and employs his utmost art to urge the coy ones to develop their richest treasures when they would reserve them for more genial seasons,—a contest ensues, but the plants are forced. Nature yields to art, and "there's an end on't." Every one knows that roses and lilacs, and such things may be forced, and therefore all who have anything to do with the work, make provision of them to extent suitable to the means at command. My object is to show how the charm of variety may be introduced in this branch of gardening, by bringing into notice a few shrubs equally adapted for the purpose, and with which success is also equally sure, but which have hitherto escaped the ordeal, at least in a general way, some of them probably because they are yet too new to be spared by every one for the purpose, and others for just the opposite reason. Situated where novelty is indispensable as success, I have been lead to look for "some new thing" to form a feature in each pursuit, and as a result in this particular division, the following addition to the ordinary stock of forcing shrubs, is offered:

Dentzia scabra becoming tolerably well known, and esteemed for its beautiful snowdrop-like flowers in loose racemes, at the summit of the branches where they stand in beautiful relief above the dark green foliage, is only equalled by the comparatively new *D. staminea,* a plant from the north of India, also with white bell-shaped flowers which are exquisitely scented; both may be brought into bloom in March by merely keeping them in the greenhouse, or they may be forced with gentle treatment a month earlier.

Andromeda floribunda is of the same class and equally beautiful; the snow-white flowers are produced in great abundance under similar treatment.

Forsythia viridissima, one of Fortune's plants from China, also forces well; it is deciduous, and the flower-buds are produced for nearly the whole length of the recent wood, these expand in a temperature of about 55°, and clothe the branches with large, handsome, yellow flowers, reminding one of the *Chimonanthus,* all the species of which should be included in the forcing shrubs, not that they positively require forcing, but because their handsome and fragrant flowers are displayed throughout the winter in an ordinary greenhouse.

The double variety of *Ribes sanguinea* is a great improvement on its parent, and should always be grown in preference; it requires the treatment usual with roses and such things, and its bright red flowers mingle well with the more usual white and yellow tints.

The handsome *Wiegela rosea,* if properly matured in the autumn, is a fine addition, but must not be forced rapidly: a conservatory temperature brings it out beautifully, but a stronger heat induces the production of leaves only.

Another recent plant, the *Jasminum nudiflorum,* is a nice addition to our winter store of flowers, it also requires a temperature elevated a little above that of the greenhouse, and if well grown in the preceding summer forms a fine object. A. F. T.

FLORICULTURAL HINTS.

As the layers of picotees and carnations have had a very favorable time, we may now expect them to be quite fit for removal; it will be well therefore to prepare the soil required to pot them in: for this purpose nothing equals a pure unmixed turfy loam; that from a pasture is very frequently recommended, and but for the almost universal presence of wireworms in such soil, nothing better could be wished. In most localities there are certain spots of waste land, which acquire a degree of celebrity for the goodness of their soils, and from whence the neighbouring gardeners procure their supplies; near the metropolis and other large towns the drawing of such soils affords a living to very many, and from some such place the amateur, who has no pastures of his own, may obtain the particular earth he requires by placing an order in the hands of an individual accustomed to the business, who, with the simple direction to get it "light," will procure the exactly fitting quality.

When this is brought home, it should be placed under shelter, and as opportunity offers, a vigorous search for insects should be made; and by remembering that the accidental escape of a single grub may prove the death of one or more of the most esteemed varieties, much of the tediousness of the operation in looking through the heap a single handful at a time will be obviated, and the same recollection will give nerve to the more enthusiastic to attempt a second examination. The pots commonly known as large sixties, measuring about four inches across the mouth, are generally used, and are abundantly large enough for a pair of plants; but as it is also usual to put three plants into each blooming pot at the spring shifting, the present may as well be made a preparatory measure, and to save the risk of tearing the roots in the separation of the odd plants, I would advise three to be put into a forty-eight pot, or those a size larger than the first mentioned, a greater number of plants will thus be stowed in the same space, and when wanted for repotting, it is only necessary to transfer the entire ball, and thus not a fibre need be injured.

The custom of selling these plants in pairs, is to me unintelligible, for two are too many for twenty-four-sized pots, and not enough to fill a sixteen, the usual size for blooming in. A knife with a long flat haft, is the most useful instrument that can be employed in separating the layers, and after removing the surface mould and pegs so as to come at the buried stems, they should be detached about half an inch beyond the point of the tongue, and carefully lifting the roots with the knife handle, the whole mass should at once be placed in the pot intended for it; a week's nursing in a frame will assist their reestablishment, and after that a very free admission of air must be given to harden them preparatory to meeting the winter.

It will be well, as a precaution against early frosts, to cover the earth round the stems of dahlias to a distance of a foot, with three or four inches of loose mulch; but it will be well to leave the roots in the ground as long as possible, that they may have the benefit of the descending sap and become properly matured.

Those roses which were budded in summer, and have grown since, should have their new branches securely tied to a stick, or they are liable to be blown completely out of the stock. Transplanting may now be done with greater success than at any other time. Cuttings of the China, Tea-scented, and Bourbon kinds, struck in July and August, should be potted separately into a mixture of peat and loam. Look well to the Auriculas, and see that the drainage of each pot is perfect, and that worms do not ascend into them; if flower-stems make their appearance, allow them to rise their full height before plucking; seedlings sometimes require a rather full exposure to sun to check over-luxuriance. Get them into winter quarters before the autumn rains occasion any injury, allowing plenty of air.

FLORISTA.

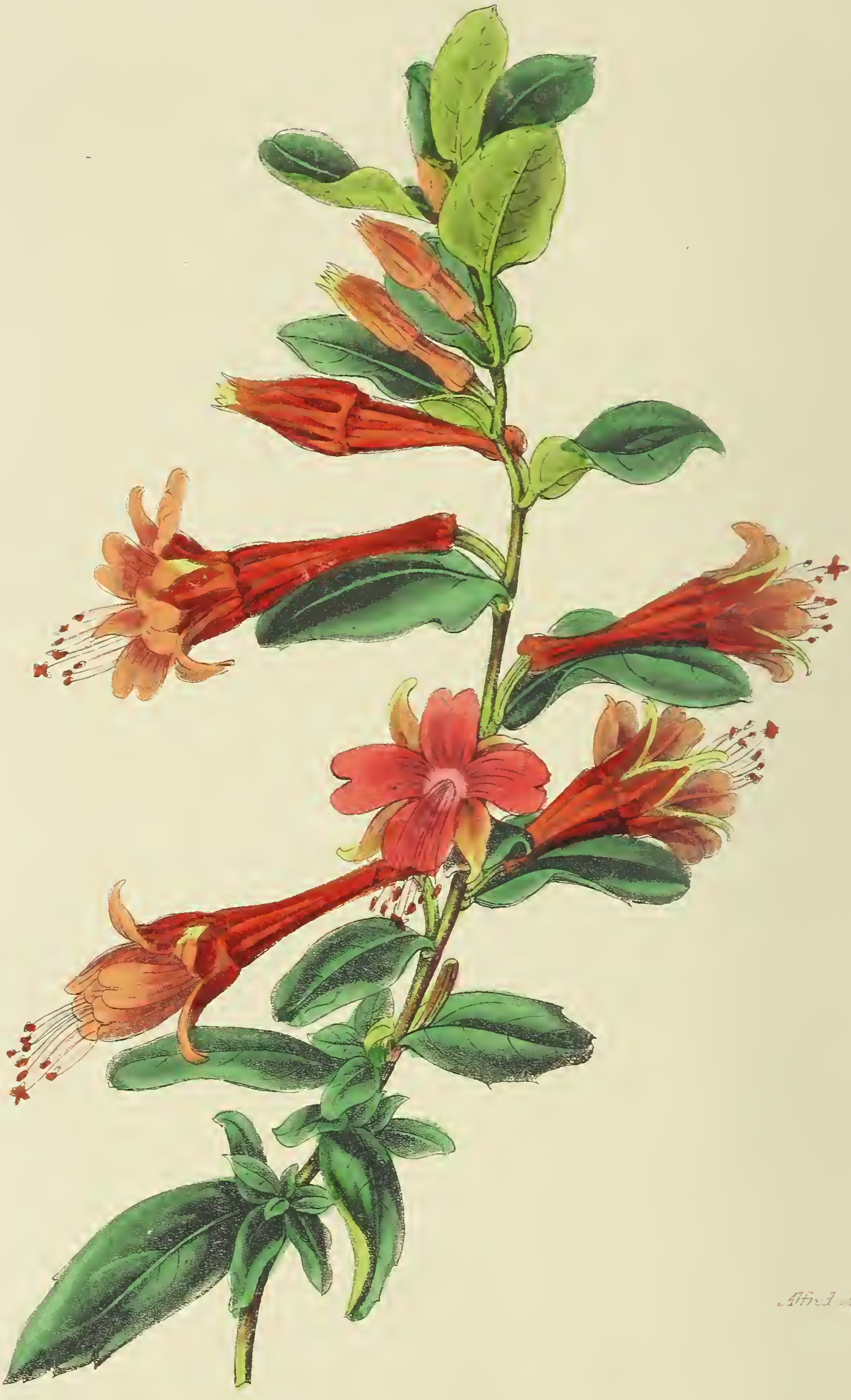
CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS. OCTOBER.

Fruit Garden. Take advantage of all favorable weather to secure the crops of late fruit, gathering only when perfectly dry, and removing them at once to the fruit-room. Morello cherries, netted up for late use, should be occasionally looked over, and any dead or decaying leaves removed; the same with currants and gooseberries, which, if matted close up, should be occasionally opened so as to get thoroughly dry. Peaches, vines, figs, and all other wall-trees should be cleared of their leaves as soon as any quantity of them part easily from the boughs, so that the sun and air may have free access to the young wood, to harden and ripen it thoroughly. The trees may also be unnailed, especially figs, so as to allow of their branches being brought together, and matted up in case of severe weather. Remove the old stems from raspberries, so as to expose the suckers freely to the atmosphere, tying them so that they do not get broken over.

Keep the fruit-room as cool, dry, and airy as possible, removing all litter, or spotting or decaying fruit as soon as perceived, so that damp of every description may be avoided as much as possible. Decaying fruit, in particular, should be entirely removed from the room, and used as soon as possible: it ought to be noticed long before it is only fit to throw away.

Where walls are in want of repair, the trees may be entirely unnailed, and the stopping and dressing of the walls be proceeded with, taking care so to tie up and protect the trees, that as little damage be done to them as possible. Also, where a great deal of pruning has to be done, the hardy sorts may be proceeded with at once, apples for instance. In shortening-in shoots, always cut close to an eye, with a smooth, clean cut, slightly sloping; and, with large branches, saw close to the main stem or branch, smoothing the wound over the whole surface with the knife, and in particular leaving the bark at the edge of the wound smooth and even with the wood. In pruning apple or other trees which are very mossy, remove all the misplaced or stunted spray and branches, and then scrape the moss from the trunk and main branches as far as can be reached, washing them afterwards with a mixture of soot and lime water. But this will be found of very temporary service, unless the ground be well drained; for it will generally be found, where moss abounds, that the soil is cold and wet.

Forcing Garden. Maintain a free circulation of a dry atmosphere among the late grapes, by lighting small fires during the daytime, and giving air as freely as the state of the weather will permit; also remove the leaves as they show signs of decay. Replace the sashes on the early vinery so as to prevent the borders being saturated by the autumnal rains, allowing otherwise as free a circulation of air as possible. Get the sashes on to the early peach-house also, and loosen the trees ready for pruning and dressing; prepare, also, to fill up vacancies, or renew trees where necessary, by selecting proper plants, and having composts and other requisites at hand; the trees should be removed as soon as they are well clear of leaves. Cherries in pots, intended to be forced in this house should also be introduced, receiving only so much moisture as to prevent the buds from falling or the branches from shrivelling. A first batch of strawberries may be got into a pit or frame, where they should have as much air and as little water as possible. Keep the fruiting or full-grown pineapples at about 80°, with a less supply of water as the days shorten; the succession plants should be rather cooler with more air and less water, but should on no account be checked entirely; in fine weather give light syringings overhead. Cucumbers for winter fruiting in houses should be kept gradually growing in a moist airy atmosphere of about 75—80°, being very careful of the use of water in dull weather. D. M.



Alfred Adlard sc.

ZAUSCHNERIA CALIFORNICA

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ZAUSCHNERIA CALIFORNICA.

WITH AN ILLUSTRATION.

This fine addition to our ornamental border plants is a native of California, where it was found about Santa Cruz, by Mr. Hartweg, and by him forwarded to the Horticultural Society of London. The seeds were received at the Society's garden at Chiswick, in May 1847, and from them were produced plants which flowered in the following autumn. The plant is called a herbaceous perennial, but it assumes a suffruticose habit, somewhat like that of a fuchsia; the stems rise from two to three feet in height, branching so thickly as to form a dense bush; every part is clothed with ovate, sessile, toothed leaves; and the general appearance, though compact, is by no means lumpish, as the spread of the branches, when the plant stands in an isolated position, is considerable, imparting an easy gracefulness, without impairing the neatness so desirable in everything connected with the parterre. In another feature it resembles the fuchsia: the flowers are produced from the axils of the leaves near the summit of the branches. It requires time to form about the half of its season's growth, and then commences the production of blossoms, continuing to develope them as the subordinate shoots are extended; and this, be it remembered, is not of a partial character, but every leaf of every branch on a healthy plant, arrived at a blooming condition, emits from the base of its footstalk one flower, so that, on a well-grown specimen, the display is equal in every part, and extremely effective as a whole. The individual flower measures about an inch and a half in length, the coloured calyx tube occupying about two thirds, and the spreading limb the remainder; the four petals are inversely heart-shaped, the points of each being attached to the interior of the tube, which has four stout ribs, and the whole is of a deep and bright orange scarlet; the pedicles are strong, standing in a horizontal position, and of sufficient length to throw the flowers prominently forward among the foliage.

The climatal character of the locality whence the plant was obtained is sufficient to warrant the expectation that it will bear all but the severest vicissitudes of our own, if it is only stationed where that more destructive agent, water, cannot multiply the power of frost by its stagnate presence, and the limited experience we have yet enjoyed in the culture of the plant fully bears out this supposition. We have all heard, more or less, of acclimatizing plants, and those who have waded through the theories propounded for and against the idea, must have arrived at the conclusion that if the nature of a plant is not to be changed so far as to render it possible to cultivate tropical vegetation in a temperate region, yet its entire tissue may be altered by the presence of moisture, or its opposite, to so large a degree as to offer a very reasonable apology for those who contend that culture alone makes the difference.

Plants of acknowledged tender constitutions have, in frequent instances, been known to withstand the severest weather under some peculiar circumstances; while others generally considered hardy, by an opposite combination, have been annihilated. An inquiry into the causes of such contrary effect, it may be of the same degree of cold, will generally show that the disastrous results are traceable to the presence of excessive moisture, not necessarily observable in the form of water, but always in an immature, soft, or excited condition in the organization of the individual injured; to exemplify which it is only necessary to take a specimen of the hardiest vegetable form we possess, and after filling its vessels with fluid matter, or, in other words, set it growing, suddenly expose it to severe cold. The effect is the same when natives of a climate more decided in its character than our own are kept in an excited state by the aqueous condition of the atmosphere, and are thus overtaken by frost; their tissue is distended, ruptured, and finally broken up; they would probably have withstood the cold had it been possible to withdraw the surcharge of fluids, but the expansion caused by frost is so great as to be fatal to the entire frame. An inspection of the stems of such things as heliotropes, fuchsias, &c., suddenly subjected to the action of frosts, will usually exhibit a complete rupture even externally, and afford a very accurate notion of how and with what force it acts upon forms so fragile. Frost and cold are commonly spoken of as being identical, but the terms are by no means synonymous; the most intense cold we ever experience devoid of frost does not destroy vegetation at once; tender plants under its influence may turn yellow or brown, lose their leaves, and become unhealthy, but may generally be recovered with proper means; while a single night's frost, with the thermometer not nearly so much depressed, will totally kill them. The power and, indeed, the presence of frost seem to be dependent upon the amount of moisture present; at the same time, a perfectly dry article will show scarcely any signs of it, when a wet one will be be frozen very much: this may be readily proved by placing a wet and dry cloth side by side,—the condition of the first will scarcely be altered, and indeed it would remain precisely the same, but for the moisture it imbibes from the atmosphere, while that previously saturated will be completely stiffened. It is, then, the presence of fluids in the system of a plant we have most to dread when about to encounter the rigours of our seasons, and an excess is as much to be feared in our indigenous products as in those of an exotic character, for as surely as the power of steam will rive the hardest substance, so, by the power of the same principle—expansion, will frost rupture the replete vessels of any plant.

This is a great fact for the study of all horticulturists; we may have failed to convey its importance in the best manner, but the fact remains the same, and it is particularly worthy the attention of any who contemplate trying the hardihood of new subjects at this or any other season. It must be remembered that, to meet and resist an increase of cold, a diminution of moisture is necessary—a rule which applies to plants in all positions, and to be made a leading feature in the culture of such as the Zauschneria in particular. This plant, which appears, under ordinary circumstances, to be one of the easiest to manage, may, nevertheless, receive considerable injury if neglected in the respect pointed out. It grows through the summer with the greatest freedom in common soil, but we would urge upon all who intend to leave it in the open air through the winter, to be first well assured it has ripened the greater portion of its recent growths, and that the spot on which it stands is well drained, or the loss of the plant may result. Propagation is effected by cuttings struck as is usual with half-hardy plants, or by seeds, which, sown in spring, and treated with a little heat in their earlier stages, form blooming plants in the same season. The genus was founded by Presl, and occupies a place in the natural order *Onagraceæ ;* in the Linnæan system it forms part of *Octandria Monogynia.*

THE CYCLAMEN.

The management of this beautiful genus of spring-flowering plants does not seem to be generally understood, if we may judge from the meagre specimens occasionally to be met with ; for, though so long known, they are by no means so plentiful as their intrinsic beauty would lead one to expect. If the following hints regarding their culture should assist in their distribution, or enable any one to enjoy them in increased beauty, I shall be much pleased. I grow them both in pots as window plants, and in the borders of the garden ; for the first position they are unrivalled, and particularly suited, because so obliging as to retire when the great bulk of other plants begin to get interesting, only occupying space and attention when there is a paucity of flowers. In the borders the principal part bloom along with the crocuses and other early flowers, affording a pleasing diversity, and in autumn, the pretty *C. europæum,* and the varieties of *Hederifolium,* enliven the borders for a month or more. In either situation they require a light, yet moist, rich, but not tenacious, soil ; a mixture of peat or leaf-mould, with nearly equal quantities of loam, old hotbed manure, and silver sand, appears to suit them exactly. Repotting of all the spring-flowering kinds should be done in autumn, as soon as they evince an inclination to grow, and it is of much benefit to do it annually ; they make but comparatively few roots, and therefore never need large pots, such as are about half an inch, or rather more, above the diameter of the tuber I think the most suitable ; plenty of drainage, in the shape of crocks and pieces of peat, must not be forgotten, and if the pots are lightly filled to the rim, the tuber, being pressed down firmly, will generally be left about the proper position, the upper surface being just level with the top of the pot. For a month or six weeks after potting I keep them out of doors, or, in fact, they may remain, and will grow the stronger for it, till a probability of frost renders their removal advisable; not that they are tender, for, with the exception of *persicum*, all will bear the worst weather without flinching, but a check at this time may have the effect of throwing the flowering season a month backward, and on this account I remove all the potted plants before they are subject to excessive cold. Having a considerable number, it would be inconvenient to take them indoors all together, so they are in the interim stationed in a common frame, and being allowed plenty of air in the day, with protection at night, they grow vigorously, and seldom fail to bloom abundantly. The watering is moderately performed at first, and the character of the season precludes the necessity of giving much when in a more advanced stage; but when taken into the house, which commences about Christmas, and is continued in succession as they show signs of flowering, an increased allowance is indulged in, to meet the additional requirements of the rising leaves and flowers, and to counteract the dry atmosphere of the room. The expansion of flowers generally begins in February, and continues up till April, and beautifully they group with such things as hyacinths and narcissi. I need say nothing more of them in this stage, for we have only to give them their regular supply of water and quietly enjoy their beauties, till the flowers begin to fade: a very active movement of the roots then takes place, and as much air as can be supplied without subjecting them to a check from cold should be given; with me they are taken back to the frame, and there stand till the weather permits their entire removal to the open air. As a summer position, the foot of a north wall is selected, and here being carefully supplied with water, so long as any signs of growing are yet perceivable, they attain the completion of the season's action, and are then allowed to sink gradually into a dormant state. A careful watch for slugs is necessary, or they sometimes commit sad ravages on the tubers. The period when the plants are losing their seasonal activity is the most particular one; the inclination to rest must be encouraged by withholding water, and when the leaves begin to wither, the pots should be turned on their sides, the more effectually to prevent any undue moisture coming at the roots. But previously to this the seed will have arrested attention, for the footstalks are among the most remarkable of vegetable phenomena. When the flowers are set, as it is called, either by natural or artificial impregnation, the seed soon begins to swell, the petals fall off, and in a short time the pericarpium stands prominent on the erect stalk ; it ultimately arrives at the size of a small marble, and as maturity comes on the footstalk begins to coil itself in a spiral direction, till it resembles a bell-spring, and as this motion commences at its base, the seed-pod is gradually lowered, and by degrees is brought in contact with the earth, which never happens till it is nearly or quite ripe, and affords a most striking instance of the wonderful means which exist in nature for the preservation of species. The Cyclamen loves shade, and thus the seed is deposited where it will be certain to receive the shelter of its parent's leaves, and in the kind of soil that has been the means of its support. This seed affords a ready method of increasing the stock of plants ; it should be sown in March, in shallow pans of light peat soil, and if placed in a gentle heat will speedily vegetate ; the young plants should be pricked out into other pans to afford the requisite space, and if encouraged in a frame through the spring and early summer, will form nice little tubers by autumn, when they may be separated, and kept with the older plants ; they bloom in the second spring after sowing. In the borders, Cyclamen should, if possible, be planted nearly together, to facilitate the preparation of suitable soil, and also that they may readily be covered in case of very early or severe frosts occurring when the ground is bare or the blooms rising. They do not require any nursing, but the protection of a handglass will sometimes be the means of preserving a fine head of flowers. A rather shaded border suits them best, and if introduced in the front of American clumps, the soil will be appropriate, and the progress of the plants satisfactory. In such a position the heats of summer are always sufficient to ensure their complete rest, but that it may not be disturbed, no other plants that may require to be watered at that time should be allowed near them.

As there seems to be some confusion in the names of some of the species, in the nurseries, where I have bought one kind for another, I will attempt a brief description of the genus.

Coum. Leaves round, smooth at the edges, deeply cleft next the footstalk; flowers lilac and red, segments of the corolla ovate; blooms from January to March. Sometimes called *Clusii.*

Europæum. Leaves rounded, heart-shaped, notched on the edges; flowers lilac and red, segments much longer than in the preceding, produced in autumn. Has also been sold as *Clusii* and *hederifolia.*

Hederifolium. Leaves heart-shaped, but more acuminate, besides being angularly toothed, and brightly variegated with white in the middle; flowers of the species purple; segments lanceolate, acute. There are two varieties—one, *albidum,* with white flowers; the other, *purpurascens,* bearing blossoms of a deeper hue than its parent. The species blooms in March and April, but the varieties not till two months later. Sometimes called *europæum.*

Latifolium. Leaves large, angular, deep green; flowers red, produced in March. Sold for *ibericum,* a species I am unacquainted with.

Linearifolium, I am told, has singular narrow leaves and purple flowers, borne in March; but I have hitherto been unable to procure it.

Neapolitanum resembles *hederifolium* in habit, but has red flowers, with ovate, acute segments, produced in March.

Persicum, the most valuable of the genus, has kidney-shaped leaves, slightly toothed, and less deeply cleft at its junction with the footstalk. The flowers are red and white; the segments are oblong and blunt-pointed. They are produced from January to March. It is the most tender species, as it requires to be protected from frost, and is, in fact, a greenhouse plant. It has three or four varieties, the most esteemed of which is *odorata,* on account of its delicious fragrance. This plant closely resembles its parent, but the superior scent is sufficient distinction. *P. albiflorum* has pure white flowers, and is a very handsome variety. *Inodoratum* is too nearly like its parent to be worth growing in the same collection, and, indeed, is often sold for it. The other variety, called *laciniata,* has also red and white flowers, but is readily known by its toothed leaves.

The only other species with which I am acquainted—though I understand there are two more known in gardens,—is the beautiful—

Vernum. Leaves cordate, slightly toothed, with a notch at the apex (emarginate), the lobes formed by the cleft at the footstalk overlapping each other; flowers purple, short, the segments ovate and blunt; produced in March and April.

A matter, worthy the attention of cultivators of these pretty plants, may be mentioned, without danger of incurring the smile of incredulity, in these days of novelty-seeking and wonder-producing, as to the possibility of producing hybrids. It seems to me perfectly feasible, and in all probability I shall attempt it next spring. The mingling of such forms as *vernum* with *hederifolium*, or the latter with *coum*, or even *persicum*, must surely produce something fresh; and thus the already great interest (when they are properly known) of this charming tribe may yet be increased, to the great delight of your humble servant,

P. H. D.

CONVOLVULACEÆ.

(*Continued from page* 223.)

The stove species of *Ipomæa* are principally climbers of extensive growth, and bearing very handsome flowers, which create a truly splendid display when developed on healthy specimens. The most remarkable are such as *Horsfalliæ*, with blossoms, three inches in diameter, of the richest crimson; *Hardingii*, producing flowers, equally large and elegant, of a delicate deep-pink and rose-colour; *tyrianthina*, very deep purple; *batatoides*, purple and red; *Purshii*, rose-colour; and *pulchella*, purple and violet. The last two are distinguished by a shrubby habit; the preceding being all tuberous-rooted climbers. They require to be kept dormant through the winter, and in spring, when they are re-potted, to be plunged into bottom heat, and kept growing in an elevated, moist atmosphere; the last particular being most essential, as, if continued in dry, warm air, they are speedily attacked by red spider, which, once established, will bid defiance to the cultivator's most strenuous exertions towards their eradication. The soil most suitable is composed chiefly of peat and loam, enriched with manure or lightened with sand, as may seem necessary, and the pots must be large in proportion to the size of the tubers; indeed, the more root-room that is allowed, in general, the finer will be the growth and production of blossoms. The habit of the majority of the species fits them either for large trellisses or the roof of the stove; the beautiful *Horsfalliœ* is extremely effective in the latter position, but requires a good deal of attention to the removal of insects, which soon congregate upon it, and thence descend to the plants beneath. As a difficulty is always experienced in propagating this and several other species by cuttings, we may mention, that the readiest mode is by root-grafting. If a piece of a growing shoot (the end of a young one is best) is taken, and attached to a separated root of proportionate thickness, by means of a cleft cut in the latter, and the base of the cutting reduced to a wedge-form, securely fastened with bass, and plunged in a brisk bottom heat, with the extra assistance of a glass over all, it will soon unite and grow rapidly, thus making a blooming plant in the same season; while the cuttings, treated in the ordinary way, will remain on hand many months. Any that root tardily as mere cuttings, may be thus increased with the greatest facility.

The greenhouse species are, *candicans*, white; *pandurata*, white and red; *Michauxii*, white and blush; *Carolina*, purple; *pendula*, purple; *dasyspermia*, yellowish-purple; *sinuata*, white; and *longifolia*, white. *Pendula* has a suffruticose habit, and the others are all climbers, differing from the former section only in requiring a lower temperature. Of the hardy species, *I. atropurpurea* is most familiar. The other kinds enumerated in this section need only the same easy treatment, of being sown where they are to flower, and are almost equally worthy of attention. In growing these plants, it should be remembered that they delight in rich soil. No other consideration need be mentioned.

Leptocallis is a small genus of only one species, *L. armata*, a stove, climbing annual, with red flowers, tinted with rich shades of violet. It should be sown in March, and have the assistance of bottom heat in its earlier stages.

Mina is another equally small genus. The only known species is *M. lobata*, a greenhouse plant of scandent habit, with beautiful pale lilac and crimson flowers. It should be grown in peat and loam, with plenty of air and water in summer. When trained to a trellis it makes a fine appearance. In winter, a warm shelf near the glass and but little water, preserves it best.

Pharbitis. Though of less extent than some others of the order, this genus is second to none in beauty. The greater part of its members are hardy, climbing annuals, among which the most popular is *P. hispida,* or, as it is commonly called, *Convolvulus major.* This, with its numerous varieties, is esteemed as one of the most showy border flowers. *Barbigera, hederacea, Purshii, scabrida, cærulea,* and some others, are all sufficiently robust to grow and flower in the open air, though they are materially assisted by raising the plants in heat some time in March or April, and afterwards transferring them to the borders when the weather becomes settled. The portion of the genus most worthy of attention is, however, the greenhouse kinds. The splendid *P. Learii,* and not less beautiful *ostrina* and *Nil,* are instances of the value of this division. The first is one of the finest climbers it is possible to introduce to either the greenhouse, conservatory, or stove; it is of vigorous habit, extending forty or fifty in a season, or even more, in proportion to the encouragement it receives. The brilliant cærulean-tinted flowers are produced in great profusion throughout the entire of the season's growth, and, being in clusters, as well as individually large, they are surpassingly effective. The rich, purple flowering *ostrina* is but little inferior when well grown; and, as an ornament to the lower part of the walls or pillars, the deep blue *Nil* is equally desirable. The habit of the last being much more restricted, suits it also for pot culture. When fixed to a trellis, there are few plants more beautiful. In general aspect it resembles the *Ipomœa rubro-cærulea,* but the flowers are a shade deeper in colour, rather larger, and more freely produced. It is an annual, and, if raised under protection and afterwards planted out, will flower in the open air. The others are perennials, readily increased by cuttings, which in *Learii* should always be taken from the upper part of the plant, as it will be found that the creeping stems it naturally produces, besides the climbing ones, do not blossom near so freely. The whole of this genus delights in strong, rich soil, and therefore the mixture should contain a good portion of loam and reduced manure, adding leaf-mould instead of peat, and sand enough to keep the mass porous.

Porana contains three species : the first, *racemosa*, is a greenhouse, climbing annual, which, in warm situations, will produce its pretty clusters of white flowers in the open air; the other two, *paniculata* and *volubilis*, are stove, climbing annuals, having also white flowers, borne in clusters. They are pretty, but less effective than some others which have been mentioned. Loam and leaf-mould suits them, and the syringe must be frequently in use while they are growing.

Quamoclit. A genus of thirteen species, mostly tender, climbing annuals, of limited habit and numerous small, gaily-coloured flowers. Q. *phœnicea* is a neat little hardy annual, with ascending stems of some three feet in height, bearing small scarlet flowers, and is the only species which will bear exposure. Q. *vulgaris*, better known as *Ipomœa quamoclit*, is a familiar summer occupant of the greenhouse, and may serve as an illustration of the culture of the entire genus. The seeds should be sown on light, rich earth in March, and plunged in brisk heat. The young plants require potting separately as soon as the seed-leaves are fully developed, and afterwards to be shifted as they grow till they stand in eight-inch pots, and, in the course of the progress, supports of some description must be introduced, to sustain the flexile stems. The pretty orange-scarlet flowers begin to appear in July, and continue through the summer. There is also a white-flowering variety of this species. Perhaps the most deserving of this genus are, *coccinea*, scarlet; *serotina*, orange; *grandiflora*, scarlet; *longiflora*, white; and *triloba*, purple.

Rhodorhiza. The only species, *R. scoparia*, or, as it is commonly known, Canary Rosewood, is a greenhouse, subscandent plant, with twiggy branches, rising about three feet high, clothed with linear leaves, and bearing white blossoms in twos and threes. It grows best in peat and loam, and is increased by cuttings or seed.

Rivea is an interesting genus, containg four species, all stove, climbing perennials, with large, handsome, white flowers. *R. bona-nox* is the most familiar, its name of Good-night being allusive to the opening and closing of its flowers. The other species are, *hypocrateriformis*, with large, wide-mouthed flowers—it is the *Lettsomia uniflora* of Roxburgh; *ornata*, a handsome species, also included in the genus *Lettsomia* by Roxburgh; and *tiliæfolia*, having leaves resembling those of the lime-tree, occasionally called *Ipomæa gangetica*, *Convolvulus gangeticus*, and *Convolvulus tiliæfolius*. All of them succeed with the treatment recommended for the stove Ipomæas, but should have rather stronger soil, loam and well-decayed manure forming the chief part.

Shutereia contains but one species, the *S. bicolor*, a pretty stove annual, with blue and white flowers. It has also been called *Calystegia Keriana* and *Convolvulus involucratus*. The seed should be sown in spring, and the plant subsequently receive the treatment usual with tender annuals.

Skinneria. Like the last, this genus is composed of only one plant, the *Convolvulus cæspitosus* of Roxburgh. It is an interesting stove perennial, of dwarf habit, and pretty striped flowers. Light, rich soil suits it, and propagation is effected either by seeds or division.

This completes the order as at present constituted, and from among its members numerous objects of the most chaste beauty or gorgeous display may with ease be selected, to ornament all or any of the departments of either large establishments or the limited space of a suburban garden. The general characteristics are, easy management, rapid growth, and a rich display of flowers.

IPOMOPSIS ELEGANS.

NOTWITHSTANDING the length of time this fine plant has been known to us, and its real worth as an ornament to the flower-borders or greenhouse in summer, it is still scarce, and seldom seen in the perfection it is capable of attaining; this, no doubt, results from the acknowledged difficulty of keeping it through the winter, and being a biennial, it can only be had to bloom after passing the test of our six months of dark, damp, and cold weather. Having been more than ordinarily successful these last three years, I send you the particulars of my management, as they may chance to be of assistance to some who desire to possess the plant. I believe the principal point to be, securing early plants; and to make sure of them the seed should be sown in

June; this is a month or six weeks earlier than is generally recommended, but I was induced to try that period, some four years since, with a view to get the plants more firmly established before the winter, and found it to succeed admirably. I sow in shallow pans of sandy loam, and only cover the seed with a thin coat of sand; the pan is placed in a cold frame, and as soon as the young plants can be handled, they are lifted with the haft of a knife, and transferred to small pots, standing three together in a sixty. By continuing them in the frame scarce any check is visible, and, as soon as they seem to be perfectly recovered, air is admitted freely; while the plants are young, the watering must be very carefully done; the soil being principally loam, a small quantity of water is generally sufficient, and that must pass through the pots quickly, or the neck of the plant will rot. Still, with the necessary attention to drainage in the potting, and some care in the subsequent supply of moisture, together with plenty of air through the summer, at least two thirds of the plants will be living in September, and those which have got thus far will mostly be vigorous, and the pots well filled with roots, which I hold to be the main desideratum towards their preservation. Through the remainder of the autumn they should receive the full influence of the sun, and but little water, the object being to induce an indurated condition, and ensure the thorough completion of the ripening process. In this state they may be transferred to the greenhouse as soon as the weather may render such a step desirable, with every prospect of a successful issue, and if a shelf, near the glass in a warm part of the house, where they will be completely clear of shade and drips, is selected for them, and the same care in the watering continued, the losses through the winter will probably not exceed another third. The usual expectation is to save only one plant in each pot, and this is much more than usually happens; but by having the plants so early and thoroughly established before taking them to the greenhouse, I have succeeded in saving even more, and the amount of my surviving plants since adopting the method described has been nearly one half of those originally potted. The winter is, of course, the most trying period, and if a decaying plant is observed in any of the pots, it should be removed at once, before the infection spreads to its neighbour; sometimes mildew may be stopped by dusting the affected parts with sulphur, and at least it is always worth a trial; but the removal of sickly plants, especially such as are suffering from the disease named, should always be observed. Damp among the foliage must be carefully avoided, and I never use the rose on the water-pot. In March the principal danger will be past, and we may set about repotting; in this operation it is essential that the small fibrous roots are not injured, and, therefore, though more than one plant may have been saved in each pot, they must not be separated, for the inevitable tearing of the roots which must follow would, beyond question, destroy both of them. The duplicates must either be cut away at once, or the two plants stationed together. The pots called twenty-fours, or sixteens, are about the size required to bloom in, and the soil should be principally loam of a sandy character, and further lightened with a few lumps of peat distributed through it. It will be necessary to keep the plants in the house till the weather becomes mild, when they may be taken to a cold frame, and, with unremitting care in the supply of water, the flower-spikes may be expected to appear in July; their beauty will be fully developed by August, and through the autumn no finer object can be desired than a well-grown specimen of this Ipomopsis; its light green feathery foliage enriching the brilliancy of its splendid scarlet blossoms.

HORTULANUS.

WINTER TREATMENT OF CALCEOLARIAS.

How to keep Calceolarias in a healthy condition from October to March is often a vexatious question; they must be preserved over the winter, if really fine specimens are desired; for though spring-sown seedlings may, with very good management, be induced to flower the same season, yet they have not the size required in plants intended for exhibition, or desired to be regarded as instances of good culture. Calceolarias, of the herbaceous kinds in particular, are always more impatient of a damp confined atmosphere, than of one several degrees colder, and, at the same time, dry. I have known them resist nine degrees of frost, but they were at the time almost devoid of moisture, and on this circumstance I have since grounded my winter treatment. The plants are repotted as soon as their seed has ripened, which is usually about the beginning of August, and being then placed in rather small pots, well drained, and filled with sandy loam, they stand in the open air, in a sunny position, sheltered from rains, till the middle of October; they have not generally made much progress when taken into the house, the leaves being small, leathery-looking, and anything but handsome, and so they remain often till February, but as this character may at any time be readily altered, I do not mind it. A shelf suspended from the roof of the greenhouse receives them, and there they remain, with but little water, till about the middle of February, when they are repotted, and soon assume a different aspect. The restricted growth in autumn, placing them in loam rather than a lighter material, and keeping them subsequently in unobstructed light and a free current of air, I believe to be the essential points, by observing which success seldom fails.

KRYPTOS.

DESCRIPTIVE LIST OF NEW PLANTS.

RANUNCULACEÆ.—*Polyandria Polygynia.*

Clematis indivisa, var. *lobata* (Hooker). This is really an ornamental and showy greenhouse plant, native of New Zealand, discovered by Forster, during Cook's voyage, and of which seeds were sent to us by the Rev. W. Colenso from the same country. Mr. Allan Cunningham found it on the margin of woods, on the shores of the Bay of Islands, and on the Hokianga River. It quite festoons the trees and shrubs with its dense foliage and large panicles of flowers. With us it flowered in April 1848. It is a scandent plant, with very lengthy terete branches; opposite, ternate leaves, the leaflets two or three inches long, in this variety deeply lobed, almost pinnatifid at the margin; the panicles copious, axillary, often a foot long, divided sometimes from the base by opposite branches, and there are two bracteas near the middle of the pedicels; flowers diæcious, large, white, and cream-coloured, of from five to seven spreading, oblong, large, striated, silky (on both sides) petals; the stamens at first form a compact column, with yellow filaments, and deep rose-coloured anthers; the outer ones gradually diverge and lengthen till they are about half as long as the sepals, and then the anthers are deep purple. —*Bot. Mag.*, 4398.

RUBIACEÆ.—*Tetandria Monogynia.*

Ixora lanceolaria (De Candolle). A graceful shrub received from the East Indies, by favour of the Calcutta Bot. Garden, without any name, but which accords so well with the description and figure in Roxburgh's 'Fl. Ind.,' that I have little hesitation in referring it to that species. It requires the heat of a stove for its successful cultivation, and then it flowers with us in April. It is an inhabitant of Travancore, where it was first found by Mr. Colebrooke, and of Courtallam, where Dr. Wright detected it, but who speaks of it as a rare plant. In our plant the flowers have a greenish tint, which are elsewhere described as white. The shrub, according to Roxburgh, attains a height of from five to seven feet; it is erect, with dichotomous, scarcely spreading, terete, slender branches; the leaves are about a span long, patent, lanceolate, and somewhat coriaceous; corymb terminal (but often with a young branch arising on each side), pedunculate, and trichotomously branched. The flowers rather lax, greenish-white; the tube of the corolla three quarters of an inch long, slender, uniform; lobes linear-oblong, patent at first, at length reflexed; the sides of the lobes and the filaments of the anthers also reflexed.—*Bot Mag.*, 4399.

CRUCIFERÆ.—*Tetradynamia Siliculosa.*

Anastatica hierochuntica (Linn.) Many synonymes might be given indicative of the sacredness of this plant, or of the superstitious veneration in which it was and still is held by the ignorant people inhabiting the country where it still exists; such as "Rosa de Hiericho," of Dalechamp, "Rosa hierochuntica," of Commelin, &c. Respecting this, however, the true "*Rose of Jericho,*" much ignorance prevails in our own country, and of late years among us the name has been incorrectly transferred to two very different plants (possessing similar hygrometric powers) as widely differing from this, as all are different from any real rose, and coming, too, from widely different countries;—one, the *Lycopodium lepidophyllum,* from Western Mexico; the other the capsules of certain South African species of Fig-Marigold.

The rose of Jericho (as little or less like a rose than a cabbage) is a plant humble and insignificant in appearance, yet the attention of Eastern travellers has long been directed to it, on account of the hygrometric qualities of the old withered annual stems, which are rolled up like a ball in dry weather, uprooted by the storms of the deserts in Syria and Egypt, and drifted about by the winds. If rain falls, the branches are restored to their original direction; and again, in dry weather, they become involute; and this property the plant retains after many years.

The most absurd fables have been circulated respecting the virtues of this plant, and greedily believed by the vulgar. The plant is rare in cultivation, and only preserved by annually securing the seeds. Our figures were made in part from specimens out of Mr. Borrer's garden, at Henfield, and in part from the Royal Garden of Kew. The plant is an annual, branching from the top of its somewhat fusiform root; everywhere hoary, with dense stellated hairs; the leaves are spathulate, the lower ones entire, the upper ones remotely toothed. Racemes lateral, generally arising from a little above the fork of a branch, erect, rigid, almost spiny, bearing seven or eight nearly sessile, inconspicuous flowers. The succeeding silicule is remarkable for its two large orbicular ears.—*Bot. Mag.* 4400.

MALVACEÆ.—*Monadelphia Polyandria.*

Hibiscus ferox (Hooker). One of the most distinct of the many forms of Hibiscus, and remarkable for the copious tuberculated aculei, often tipped with red. It seems to have escaped the observation of every traveller, till Mr. Purdie met with it near Iratcho, in New Grenada, and sent home specimens and seeds. The whole plant, he observes, is "full of irritating spines." In four years' time the plant has with us attained a height of many feet, clothed with such copious, tuberculated, rigid, short, prickles, as to give the appearance rather of some virulent nettle, than an emollient Hibiscus. It is treated as a stove-plant, and flowered in May 1848. The plant is an upright-growing, arborescent shrub, leafy, chiefly at the summit, and there slightly branched. Leaves on rather long, stout petioles, ample, orbiculari-cordate, shining, five to seven lobed, the lobes sharp and grossly toothed; the teeth spinulose; corolla large, fulvous-yellow; petals spathulate, spirally twisted, the apices spreading, obscurely toothed; and the stamens, with the copious anthers, form a cylinder beneath the large five-lobed stigma.—*Bot. Mag.* 4401.

ASCLEPIADEÆ.—*Pentandria Digynia.*

Hoya bella (Hooker). The most lovely of all the Hoyas. It cannot be called a climber, but the branches are diffuse, copiously leafy, so that the leaves form a dark background to the delicate umbels of flowers; the leaves in shape resemble those of a myrtle, and the flowers more lively and differently formed from those of *Hoya carnosa,* and most deliciously scented. The corolla is a purer white, and the corona a deeper purple, resembling an amethyst set in frosted silver. It is a native of the Taung Kola mountain, Moulmein, and has been imported through their collector, Mr. Thomas Lobb, by Messrs. Veitch and Sons, of Exeter. Where treated like an Æschynanthus or an epiphyte, we had the pleasure of seeing this "first gem of the air" blossoming in great perfection in June 1848. It is a free bloomer, and the flowers last many days in high beauty.—*Bot. Mag.* 4402.

LOBELIACEÆ.—*Pentandria Monogynia.*

Siphocampylos manettiæflorus (Hooker). This very pretty plant, for the bright red and yellow corollas contrast well with the glossy, dark green foliage, comes to the English gardens by way of Belgium, and we are indebted for the possession of the species to our friend, Mr. Low, of the Clapton Nursery. It is probably derived from New Grenada, and was received with the name of *S. nitidus;* but this appellation is, we should think, given to it in gardens in ignorance of the existence of a *S. nitidus* of Pohl (from Brazil), with which this has nothing to do. It is a free flowerer, and it has been in blossom all the spring, summer, and autumn in our stove. It is a small, erect, firm-growing plant, not exceeding a foot in height, suffruticose, leafy, branched. The leaves are alternate, and from their axils the peduncles proceed; the corolla is slightly curved, tubular for the greater part of its length, but singularly compressed laterally, two-coloured, red for two thirds of its length from the base, the rest yellow. Limb with five segments, ovato-lanceolate, nearly equal, scarcely spreading, the cleft above scarcely deeper than between the rest of the segments; anthers terminated by tufts of hair; stigma two-lobed.—*Bot. Mag.* 4403.

BALSAMINEÆ.—*Pentandria Monogynia.*

Impatiens repens (Moon). The finest of all the yellow-flowered Balsams with which we are acquainted, and for the introduction of which into our stoves we are indebted to Mr. Gardner, of the Botanic Garden, Peradenia, Ceylon. It was first detected by Mr. Moon, in shady vegetable soil, at "Four Korles," in that island; then by Mrs. Gen. Walker, and by Mr. Gardner, at Allegala, at an elevation of 4000 feet. It is easily increased by cuttings, flowers in May, June, and July, and will probably, during the summer months, be found to succeed best in the greenhouse. Of this genus, of which Linnæus only knew seven species, mostly from imperfect figures, Dr. Wight considers that upwards of one hundred are natives of the East Indies alone. That gentleman observes, that it is there eminently an alpine genus, delighting in a cool and moist atmosphere. Hence it is unknown on the plains of Coromandel, though not unfrequent in Mysore; only abounding in the Peninsula on the highest hills participating in the western monsoon, which enjoy during the hot months a moderate range of temperature, with a very humid atmosphere.

The plant is apparently an annual, but readily kept up by cuttings, very copiously branched, succulent, straggling, procumbent, and rooting where it touches the ground. Leaves alternate, rather small, cordate, approaching to reniform; from their axils proceed the solitary, single-flowered peduncles, bearing the rather large, helmet-shaped, bright yellow flowers.—*Bot. Mag.* 4404.

EPACRIDACEÆ.—*Pentandria Monogynia.*

Epacris. Sem. vars. No. 1. *Campanulata maxima.* This fine variety of *E. campanulata,* though shorter in the tube of the flower than the species, is nevertheless a very superior production; the corolla is deep rich crimson, very wide at the mouth, and terminating in five spreading, acute, paler-coloured segments. The plant has a good habit, grows with as much freedom as *E. impressa,* and is a most profuse bloomer. It was raised by Messrs. Low and Son, of Clapton.

No. 2. *E. bicolor.* Corolla tube wide, campanulate, four times the length of the calyx, of a deep, and very rich crimson, terminating in five spreading, acute, yellowish-white segments. This kind greatly resembles, both in habit and appearance, *E. grandiflora,* but the flowers are of a much larger size, and of a deeper and richer colour than that species. It was also raised in the Clapton Nursery.

No. 3. *E. delicata.* Corolla tube four times the length of the calyx, white, slightly tinged with pale rose colour; limb divided into five pure white, ovate, acuminate segments. Perhaps for delicate beauty and size of flowers, this variety is almost unequalled amongst Epacrises; its growth, too, is free and graceful, and the produce of flowers most profuse.—*Pax. Mag. Bot.*

FLORICULTURAL HINTS.

Tulip planting will engage the florist's principal attention this month, and those who enter into the subject with the heartfelt feeling essential to success, will have employment for their leisure evenings for some weeks beforehand. A rigorous examination of the bulbs, in order to detect signs of ill-health, is the first step, and any that do not promise to be what can be wished, should be mercilessly rejected from the best bed. Next comes the test of quality and condition: the records of last year's blooms must be looked over, and transpositions made in accordance. Never mind about high-sounding names; throw out all that are wanting in purity: a good strain of a common flower imparts more credit to the bed, than one of the most choice in bad condition. The alterations thus occasioned will, unless a large reserve is on hand, most likely cause an entire change in the bed, a circumstance to be avoided as far as may be practicable, because it entails a good deal of trouble to find the flowers in their new positions after we have become familiar with another arrangement.

As to the position and proportions of the classes, much difference of opinion exists, and, as it is merely a matter of taste, I would advise each grower to please himself. Some prefer the bizards, others the roses, and so on. My own fancy inclines to an equal proportion of the three; and, when roses run short, I make up with bizards, or at least give them the preference. Advantage must be taken of the first settled weather we get, to put the bed in order, if not already done. Everybody knows that tulips delight in strong, rich earth; but every one is not acquainted with its effect when the strength is a little in excess. To make a tulip-bed of anything like a remarkable size, altogether new, every season, is more than the majority of us can afford or feel inclined to do; and, supposing its staple to be good loam and the usual quantity of manure, I do not see the necessity for an entire renewal, especially if it has grown nothing since the tulips left it in summer. The state of the flowers last season and the condition of the bulbs when taken up, must be taken as an index of any alterations necessary. If the flowers were foul and the roots overgrown, add a good portion of road-sand; if, on the other hand, they were small, and the roots seemed to require invigorating, some fresh turfy loam and a larger proportion of manure will meet the case. So also with regard to the time of planting: it should be hastened or retarded as the flowers are fine or out of character; coarse strains being often corrected by keeping the roots out of the ground three weeks or a month beyond the usual period. After the bulbs are planted, carefully guard the bed from heavy rains, which, if permitted to fall on it, wash the nutriment below the reach of the young fibres, and, by consolidating the mass, renders it more subject to be frozen, and less adapted for the healthy development of the foliage of the plants.

Picotees and carnations are getting established in their pots. Let them have abundance of air to harden them, as a preparatory step against the ensuing cold weather. Dead or decaying leaves must be removed as they occur, and every means adopted to prevent anything like a stagnant dampness. The yellow picotees being generally more tender, are always best when kept separate, and, where only a few are grown, a common handlight will afford them just the protection required. Water sparingly; and, while air is admitted daily, and even at night, do not allow the plants to be wetted with rain.

Auriculas require a good deal of attention just now. Their winter quarters being selected where they will receive whatever sunshine may chance to be felt, it often happens that the surface of the soil becomes dry, while the bottom remains quite damp enough. This will sometimes lead a beginner into the error of over-watering, to avoid which he should raise the surface with a peg, in order to judge the more accurately of the state of the under portion. Too much care cannot be given to keep the foliage clear of extraneous accumulations; every atom of decaying matter must be constantly removed; and, if the leaves are occasionally cleaned with a sponge, they will retain a greater vigour. The bloom-stems which may chance to rise now, may as well be left, or at any rate should only have their flowers nipped off; for, if broken away close to the plant while yet fresh, often carry a rottenness into the heart.

Worms are exceedingly troublesome this season among the pinks; in consequence of the great quantity of rain that has fallen, the ground is soft, and these plagues make nothing of dragging a pair of plants into their holes in a night. The best remedy is soot or quicklime, but it must be frequently renewed, as, in so damp an atmosphere, their virtue is soon spent. Either of these articles, however, act beneath the surface, and afford the plants a double benefit,—first, by being washed into the earth, they expel all kinds of grubs, and form an excellent stimulative manure. I generally mix them together, which forms a composition of an inconspicuous colour.

Turban ranunculuses and some anemones may be planted for early blooming, and the varieties of bulbous-rooted iris should be got into the ground without delay. I am much pleased to observe the rapidly increasing taste for English irises, than which few flowers are more suited for the exhibition tables; and, with attention, no doubt great improvements will be effected in them, as in other things taken in hand by the florist.

Get the pot roses into the pits or frames intended to receive them for the winter, and keep them as dry as practicable. The same may be said of panseys, which, if not already stationed, should be attended to directly. FLORISTA.

CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS. NOVEMBER.

Fruit Garden. Proceed gradually with the pruning in all favorable weather, clearing away and destroying immediately all spray diseased or infested with insects. As soon as the trees are pruned, the ground should be manured and dug where necessary, so that the soil may be lightened above the roots, and not left in a close trampled state to hold water, and chill the roots and spongioles, which are never in a perfect state of rest. After pruning also is the time to drain or trench, so that the ground need not be interfered with again. Where new orchards are required, the trees should be procured at once, and planted. Recollect, in doing this, the first requisite, often very difficult to remedy afterwards if neglected now, is to make sure of perfect drainage, the drains being placed so deep as to be out of the way of any future trenching or surface operations. The ground should also be trenched, and manured to carry whatever crop is to be grown, but this crop should not be allowed to interfere in any way with the young trees, or the spread of their roots. The trees should be planted rather shallow, especially in stiff land, and no dung should be placed in immediate contact with their roots. They should be immediately secured by staking and tying, and the ground be left as undisturbed about them as possible. In pruning, or training to form the heads of standard fruit trees, care should be taken to keep them open in the centre, so that they shall not run up into mere pyramids, bearing only a few fruit at the top; also in shortening the other shoots the leader should be cut away, leaving a well-placed lateral to form the leader for the next season.

The pruning and nailing of the wall trees should be proceeded with as soon as all the trees and bushes in the open quarters are done, commencing with the cherries. Lay in the young wood thin, so as to avoid crowding, and to allow room for a proper supply of summer shoots to go close to the wall to supply the succeeding crop.

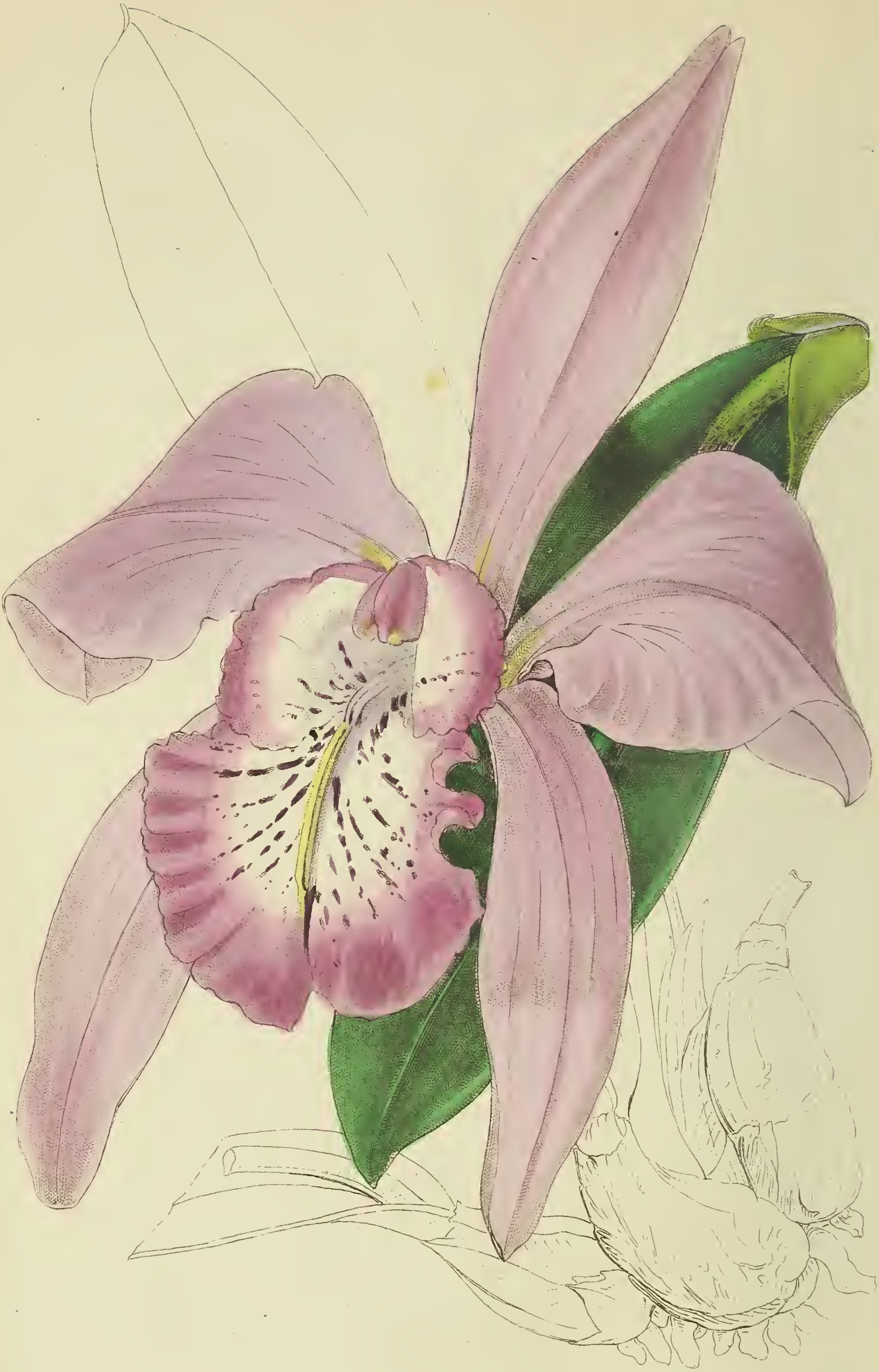
Secure the vine rods to the wall, but do not prune them until the spring. Currants, gooseberries, and raspberries should be got out of hand early, manuring and digging between them as soon as pruned; do not crop too heavy between the rows, nor too near the bushes. Dress, manure, and fork over the strawberry beds and rows, taking care not to injure the crowns of the plants.

Attend to the fruit-room, excluding absolute frost, but maintaining a free circulation of dry air whenever possible, and removing all decaying fruit.

Forcing Garden. Before commencing to force the early vines, it is particularly necessary to make sure of the borders being efficiently drained, whether inside or outside the house; and if outside, the borders ought to be sheltered by lights or other means from drenching rains and hard frosts. A thatch sloping sufficiently from the front wall plate to throw off the wet will be found to answer very well, and no great trouble will be necessary to keep the border sufficiently moist to enable the vines to ripen their fruit from a fortnight to three weeks earlier than they would if the border were left exposed. Commence to force very slowly, using both heat and moisture with great caution, but unless grapes are wanted very early, no heat should be applied until the turn of Christmas. The plants in the peach-houses may be pruned and tied in, and the borders dressed, but keep them cool and dry, so as not to start them prematurely. The same with strawberries in frames, where they should be kept near the glass, standing on shelves or inverted pots. Apply water to pineapples with great caution, and do not keep them so close as to draw the plants up weak, temperature from 75 to 80° in the daytime. Stop and train in the house—cucumbers as the plants advance, using water very cautiously, and maintaining a mild, moist, growing heat about them. Keep the linings properly renewed about those in pits or frames.

About the beginning of the month a supply of sea kale and asparagus should be placed in a mild heat, such as that of a mushroom-house, or of a pit devoted to the purpose, and gradually excited, so as to be fit for use about Christmas. The heat should be very mild, and water must be used with great caution, for fear of rotting the roots, or the tender shoots as they advance. Rhubarb should also be used in the same way.

D. M.



Alfred Adlard Sc

LÆLIA MAJALIS.

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THE GENUS LÆLIA.

WITH AN ILLUSTRATION OF LÆLIA MAJALIS.

We occasionally hear the expression of regret that the glorious order of vegetal forms among which our present subject ranks, is not more accommodating in its habits, so as to be enjoyable by a greater number of admirers; and the sigh which accompanies the declaration of inability to cope with their supposed exclusiveness bears ample testimony to the sincerity of that regret. True it is, that a great proportion, indeed the majority of orchids, belong, as it were, to the aristocracy of the vegetable kingdom, and require a peculiar treatment, insisting on an elevated and aqueous atmosphere, and are marked by other distinctive characteristics, which separate them from the mass of ornamental plants, as much in management as in appearance. But there is a portion, and that, fortunately, not inconsiderable either in respect to numbers or beauty, which comes much nigher the denomination of "everybody's plants;" these, from climatal or other causes, possess a freedom in growth and flowering, a natural inclination to thrive, which enables them to live and flourish under circumstances that would be fatal to their fellows, and places within the reach of the ordinary cultivator some of the loveliest of Nature's gems; to this class we propose to devote the present paper, with the hope of lessening some of the difficulties which obstruct the would-be cultivator in the attainment of his wishes.

At the head of the group stands the beautiful genus Lælia, not an extensive one certainly, as at present known, but containing a sufficient number of perfectly distinct species to be highly interesting. In a state of nature, it is scattered among the thickets of Guatemala, Mexico, Brazil, and other warm parts of North America, generally occurring in the more elevated districts of those countries; the precipitous sides of hills, and margins of mountain gullies, sufficiently fertile to support an arborescent vegetation, are the spots where these plants are most frequently met with; adhering to the projecting arms of a living tree, or the prostrate trunk of a dead one, they flourish and sink into a dormancy alternately with the seasons, at times subject to the saturating effects of long continued rains, and again dried up by months of warm weather, when they are always exposed to the influence of clear light and a strong sun.

Those we would recommend to a beginner are, *anceps, acuminata, autumnalis,* and *majalis.*

From the still more specious genus *Cattleya* a few kinds may be selected to associate in the treatment we are about to propose; the Brazilian species *Mossiæ, Harrisonii,* and *Loddigesii,* for instance, may safely be asserted to succeed in a much lower temperature through a great part of the year, than they are generally subjected to. So also the genus *Epidendrum* offers some which promise the utmost success, and we will name half a score which, if not among the most *recherché* of the order, are at least well deserving attention—*cochleatum major, pastoris, ciliare major, crassifolium, Stamfordianum, selligerum, primulinum, odoratissimum, oncidioides,* and *Skinnerii;* these, though in some instances devoid of the glowing colours so much admired in their congeners, possess a fragrance which compensates for their want of other attractions.

The lovely liitle *Barkeria* possesses two or three species generally acknowledged to thrive best when enjoying abundance of air, and we have seen an equally robust growth on specimens cultivated in the conservatory as could be produced by any other method.

Lycaste aromatica and *Skinnerii* are very desirable plants, and by confining them to one growth in a season, there will remain but little doubt of an abundant production of flowers.

The entire genus *Pharius* belongs also to this class, and most of the *Brassias;* and together with such plants as *Cyrtochilum maculatum, Odontoglossum grande, Calanthe veratrifolia,* and the *Cypripediums,* a goodly list of really interesting subjects may be made out, that give promise of meeting any reasonable wish. Nor should we omit that even from the Indian *Dendrobiums* one or two may be culled that are known to come within our present purpose.

It thus appears we already possess an ample number of plants to render the undertaking of no mean importance, and those who succeed in attaining perfection, without the costly appendages at present deemed necessary, were it with only half the species we have enumerated, will be rewarded with a rich display of floral beauty, and have achieved a real triumph in horticulture. And now for the means by which we propose to accomplish this task. To arrive at success we must be guided by correct principles, and as a primary step, it will be well to comprehend thoroughly the nature of the subjects to be dealt with, and to bear constantly in mind the leading features of the physical character of the countries whence they are obtained. We are about to cultivate plants that are natives of a climate more elevated and strongly marked in its changes than our own, and have, therefore, principally to guard against the effects of sudden and frequent fluctuations ; indeed, the only trouble we apprehend in the case will have its origin in these causes. There will be no difficulty in growing and flowering the species selected, but it is more than probable that some will arise in *preventing* an undue development ; the whole art of management will rest in obliging them to grow only in the summer, and to remain dormant through our long and variable winters. Excitement during the latter season must be carefully avoided, as it must inevitably entail an endless trouble and disastrous results.

The appliances we deem necessary are, a good greenhouse, for the reception of the plants when in flower and their preservation through the winter, and some other place, as an ordinary forcing pit or good-sized frame, where the necessary temperature and humidity may be supplied while they are growing. It will be absolutely necessary that all the specimens be induced to start simultaneously, or nearly so, and also to confine them to a single development in each year, for if a second growth be allowed or attempted, the plant's period of activity will run so far into the season, that no time will be left for its thorough ripening. Let the growing season commence about April, which will ensure the entire summer for its completion, and afterwards steadily reduce them to the desired resting condition, when they will be quite safe at the warmest end of the greenhouse, till the return of another season. It may require two or three years to reconcile them to this course, and perhaps cost the lives of some few specimens, but once the force of natural habit is overcome, they will as regularly grow, flower, and rest, as any of our indigenous forms. Of course, while the plants are in an active state, the ordinary treatment must be allowed, keeping them in a proper temperature, and supplying the requisite moisture, with other attentions too well known to need repeating.

THE ÆSCHYNANTHUS.

This charming genus of epiphytes is rapidly advancing in general estimation, and even now occupy a place in every good collection, a natural consequence of the union of really splendid flowers with a graceful, ever-verdant, and unique style of growth. To say they well deserve our best attention is but uttering a truism, for when well managed they are among the most gorgeous of stove-plants, and some or other of the species may be had to blossom through the greater part of the year.

There is a singularity in the character of these plants, uniting, as it does, the pendant habit of the class to which they belong, with the most copious production of foliage not usually observed in epiphytal vegetation, that, properly displayed, can never fail to arrest attention, and when seen with a due proportion of flowers, they are indeed fit objects of admiration to all.

Their general management is of the easiest description, that is, they may be grown to exhibit the utmost luxuriance wherever a suitable temperature can be afforded, though some amount of practical skill is, as may be expected, required to induce the degree of beauty they are capable of attaining. The pendulous habit which prevails in the genus will naturally point out the propriety of cultivating them in baskets which may be suspended, or in some other position, where their natural character may be developed.

It is well known to all who have attended to the culture of Æschynanthuses, that their roots never penetrate far below the surface of the material in which they are grown, and therefore the baskets to contain them need not exceed three or four inches in depth, the more usual size of six to eight inches deep being unnecessary, and indeed objectionable, from the probability of the extra quantity of soil becoming soured; it must, however, be understood that I do not recommend the roots to be restricted in their lateral extension ; on the contrary, their development in this direction should be encouraged, and with this view it is advisable to have the baskets wide as well as shallow, and the lighter their construction, the more it will add to the beauty of the plants.

To illustrate my mode of management, we will suppose the specimens planted in such baskets, in a mixture of moss cut very fine, with a third of leaf-mould or rotten wood added, this forms a porous and suitable medium for their fleshy roots. The period of their most active growth we may consider to extend from January to May, and during that time they should be kept in a warm and moist atmosphere, the temperature of which may range from 75° to 85°. Syringing will be necessary at least twice a day, to promote a healthy growth, and to keep down the red spider, to whose ravages the thick coriaceous foliage is very subject ; and when water is given to the roots, which will probably be required twice or thrice a week, let it be a liberal application, for the system of giving a little and often is most deceptive, merely tending to sodden the surface, while the lower portion is left comparatively dry. As soon as the flower-buds are perceptible less moisture will suffice, until they become quite clear of the stems, when the liberal treatment may be resumed, and every encouragement given and continued till they assume their colour. A situation somewhat cooler, though not lower than 60°, will impart the greatest brilliancy to the flowers, and preserve their beauty for a considerable time, but it will not be safe to continue the plants in a lower temperature than that named, lest the blossoms receive a check, which in all probability will prevent their expanding.

The Æschynanthus being quickly acted on by a change of temperature, I find that by removing the plants back to the warmer atmosphere, as soon as the blossoms decay, and adopting the course before described, to cause a resumption of growth, that five successive crops of flowers may be had ; and it is remarkable that without these changes, but few flowers are ever produced.

I may here mention a circumstance connected with the production of flowers, which opens a means of inducing the most obstinate to bloom well. A specimen of *Æ. grandiflora* had attained a fine state of health, and, so far as growth was concerned, could not be desired in better condition, but for several seasons it refused to flower, and, from some cause unknown to me, the plant kept continually growing; change of temperature in this case had no effect, and in time it became too large for the trellis to which it was attached. Caring very little for such a plant, I cut the leading shoots back close to the frame, and in a short time it was covered with its extremely rich flowers, amply repaying for all past disappointment; this mode of pruning I have tested several times since, and always with similar success. Its effect has been the same, not only with the species named, but also on *Æ. Boschianus, Lobbianum, pulchra,* and *radicans;* with some of the latter plants I pinched off the point of each shoot on only half of the specimen, leaving the other portion untouched, and in a month the pruned part was furnished with flowers, while, on the other side, they were greatly deficient.

Some further experiments on this part of the subject are now in hand, and I shall have much pleasure in making known the result as soon as sufficiently verified.

The winter treatment of these plants should be marked by a comparative dormancy, an amount of rest proportionate with the development of the active season, being as necessary with these as with every other vegetable form, and to ensure it they must be kept both cool and dry.

Their propagation is easy; well-ripened cuttings of the preceding year's growth are to be preferred, as being less liable to failure from damp, which often attends the employment of young tender shoots. Planted in the usual way, they emit roots profusely, and should subsequently be kept in small pots filled with light sandy peat and leaf-mould, till of sufficient strength to meet the final shift.

H. PLANT.

THE FIRST PELARGONIUM.

The curious in horticultural matters may find some interest in the following scrap:

"It appears that the first Pelargonium seen alive in England was that called *triste*, a tuberous-rooted species, which has since become scarce. It is thus spoken of by Gerarde in his Herbal; 'There is of late brought into this kingdome, by the industrie of Mr. John Tradescant, another more rare, and no lesse beautiful than any of the former (Storksbilis), and hee had it by the name of *Geranium indicum noctu odoratum*, this has not as yet beene written of by any that I know. I did see it in floure about the end of June, 1632, being the first time that it floured with the owner thereof.'"

In the next century many were imported from the Cape of Good Hope by the Dutch; and before 1732 six species were grown in Sherarde's garden at Eltham. Linnæus knew 25 species cultivated in Europe, and he called them Geraniums. L'Heritier, in 1787, divided the genus nearly as it now stands. In 1812 there were 102 species enumerated in the Hortus Kewensis.

DESCRIPTIVE LIST OF NEW PLANTS.

CYRTANDRACEÆ.—*Didynamia Angiospermia.*

Chirita Moonii (Gardner). There have been few of the many visitors to the Royal Gardens of Kew, during the season of 1848, who have not been struck with the beauty of the present plant, as exhibited in our stoves. Two to three feet in height, its leaves rather copious, opposite, or verticillate, of a pale, pleasing green, the flowers mostly whorled, and larger and more delicate, and as highly coloured as the largest-flowered *Gloxinia;* and some or other of these plants blossoming throughout the summer. The species is a native of Ceylon. Mr. Moon was the discoverer of it, at "Four Korles," and it appears in his 'Catalogue of Ceylon Plants' under the name of *Martynia lanceolata.* It exists in my Herbarium among the plants of Mrs. General Walker, and Mr. Gardner detected it in rocks near the summit of the Hantane range, and rightly referred it to the genus *Chirita*, attaching to it the name of the original finder. The corolla is nearly four inches long from the base to the extremity of the lower lip; the tube ventricose, curved a little upwards, and subcampanulate; the mouth ample; limb two lipped, spreading, of five, subequal, rounded lobes (sometimes only four); the upper lip two-, the lower three-lobed. The outside of the corolla is silky, pale purple; limb deeper purple, paler within the throat, and with a broad, yellow, abrupt line on the lower side of the tube.—*Bot. Mag.* 4405.

PASSIFLOREÆ.—*Monadelphia Pentandria.*

Passiflora amabilis. All that we can state with certainty of the history of this Passion-flower is, that it was received at the Royal Gardens from Mr. M'Koy, of Liege, under the name here given. It is very unlike any species yet figured or described, as far as we can learn; and it may possibly be a hybrid, one of whose parents may be *P. alata*, judging from the peculiarities of the sepals and petals, while the involucre more resembles that of *P. quadrangularis;* but the slender, terete stem is at variance with both. The plant is a climber, of not luxuriant growth. The calyx and petals are alike, oblong, obtuse, bright brick-red within, greenish externally. The filamentous crown is white, in four series. It flowers in the stove in May.—*Bot. Mag.* 4406.

RANUNCULACEÆ.—*Polyandria Pentagynia.*

Aquilegia leptoceras (Nuttall). Raised in the Royal Gardens from seeds, collected by Mr. Burke, in the Snake country of the Rocky Mountains; abundant about Fort Hall. James, its original discoverer, detected it between the head waters of the branch of the Platte, called Defile Creek, and those of the northern tributaries of the Arkansas; and Mr. Tolmie received specimens from a hunter, collected between Henry's and Fish Rivers. All these localities are in elevated regions of the Rocky Mountains, in about lat. 40°, and the species seems to be very local. Remarkable as it is for the large size of the flowers, and the uncommon length of the spurs, we fear that, as seen in our figure, upon a white ground, or cultivated as a solitary specimen, it possesses but few attractions; yet, growing in masses, as it does, on its native hills, it must present a very striking appearance; for James, in Long's 'Travels,' asserts that, "it forms a splendid acquisition to the flora of the United States;" and Mr. Burke, in his letter from Fort Hall, says: "I found, near Medicine River, a most beautiful Columbine, which I have never seen elsewhere, growing at the foot of a hill, in rich loamy soil, in great abundance. The flowers very large, beautifully white, variously tinged above with light blue. In my opinion, it is not only the queen of Columbines, but the most beautiful of all herbaceous plants, and I never felt so much pleasure in finding a plant before." We must therefore endeavour to increase it so as to fill an entire bed with it, and we think it is eminently suited to such an object. In the name I have adopted for the plant, I trust that I shall receive the sanction of the American botanists. *A. cærulea* has assuredly the right of priority, and Mr. James does speak of the flowers as "blue," but Nuttall describes them as "ochroleucous;" and among our numerous specimens, living and dried, white, with an ochroleucous or purplish green, rarely with a blue tinge (and never wholly blue or approaching to it), are the prevailing colours. The name, therefore, of *cærulea* tends to mislead, while that of *leptoceras* is unexceptionable. The root is perennial; the stem herbaceous, a foot to a foot and a half high; the leaves chiefly radical, and those petiolate; the flowers large, paniculate, often three inches across, white, or cream white, with a tinge of a blue, more generally of purplish-green.—*Bot. Mag.* 4407.

MYRTACEÆ.—*Icosandria Monogynia.*

Iambosa Malaccensis (De Candolle). Native of the Malay Islands. Cultivated also in the West Indies, on account of its esculent, but, as it is said, not very highly-flavoured fruit. One very handsome plant, sent to Kew by Dr. Wallich, from the Calcutta Garden, flowers in the stove in June. It forms a charming shrub, six to eight feet high, with large, glossy, coriaceous, oblong, acuminate leaves, tapering at the base into a short, very thick footstalk. The cymes, of richly-coloured, purple-red flowers, are sessile, or nearly so, arising from the old wood just above the point where a pair of leaves have fallen; the rachis and pedicels short and thick; hence the flowers appear fascicled. Petals four, very concave, orbicular-oval. Stamens very numerous, with red filaments, much longer than the petals, surmounted by the small yellow anthers.—*Bot. Mag.* 4408.

BORAGINEÆ.—*Pentandria Monogynia.*

Arnebia echioides (De Candolle). A native of the Caucasian Alps and of Armenia, quite hardy, flowering in the open border, or in a pot in June and July, where it makes a pretty appearance with its scorpioid spikes of large yellow flowers, with five deep-purple, well-defined spots at the throat. These spots, however, in the cultivated plants, are sometimes obsolete. The root is fusiform, woody, throwing up two or more erect, leafy, herbaceous stems, about a span or more high, downy, with short hair. Leaves spreading, somewhat hoary, all sessile. The stems terminate in a branched, scorpioid, leafy spike of yellow flowers, the corolla between funnel- and salver-shaped, about half an inch across.—*Bot. Mag.* 4409.

SCROPHULARIACEÆ.—*Didynamia Angiospermia.*

Torenia edentula. Plant, an annual; stem weak, erect; branches square; leaves opposite, petiolate, ovate, acuminate, serrated, downy; peduncles axillary, single flowered, and terminal, in clusters of several together. Calyx ovate, two-lipped, smooth, winged. Corolla scarcely longer than the calyx, green, tinged with purple; limb in five segments; lobes rounded, pale purple, with a deep blotch on each of the two side ones. The flowers of this species, though individually pretty, are by no means conspicuous, being too small amidst so much strong foliage. A native of the East Indies.

T. arracanensis. Plant, a perennial; stems quadrangular, climbing, very slender; leaves cordate, opposite, serrated, scabrous, with a purple tinge; flowers small, axillary, and terminal —when the latter is the case, they are in clusters of five or six; corolla funnel-shaped; tube deep purple; limb four-lobed; lobes spreading, rounded, rather paler than the tube. It has been recently introduced, and flowered with Messrs. Rollison, of Tooting, in June 1848.

ORCHIDACEÆ.—*Gynandria Monandria.*

Oncidium spilopterum (Lindley). This beautiful species was introduced by Messrs. Loddiges, from Mexico, in 1844. The flower-scape contains seven to ten flowers; the sepals small, ovate, acute, free, of a purplish-red, with darker spots; petals the same as the sepals; the labellum large; three-lobed, almost round; two lateral lobes small; middle lobe purple, red at the base, the broad spreading part clear yellow; column crenulated, somewhat heart-shaped, clear yellow, spotted with purple-red.—*Pax. Mag. Bot.*

LEGUMINOSÆ.—*Decandria Monogynia.*

Burtonia villosa (Meisn.) A small, heath-like shrub, with the leaves horizontally patent, and, as well as the branches, clothed more or less copiously with hairs; leaflets linear, obtuse, appearing to be terete, from the closely revolute margins. Flowers numerous, from the axils of the leaves, at the extremity of the branches, and forming apparently an oblong leafy spike, the leaves and peduncles being in a great measure concealed by the flowers. The short peduncle supports a hairy calyx, the tube of which is campanulate; the five spreading, nearly equal lobes, ovate, acute. Corolla rich purple, but less deep than *B. pulchella.* The wings whitish at the base, and the standard with a nearly orbicular, pale yellow spot above the short claw. Recently raised from Mr. Drummond's Swan River seeds, by Messrs. Lucombe, Pince, and Co., of Exeter.—*Bot. Mag.* 4410.

ACANTHACEÆ.—*Didynamia Angiospermia.*

Thunbergia aurantiaca Doddsii. A variety of the well-known summer-flowering climber, *Th. aurantiaca,* distinguished from its parent by the variegated leaves. The flowers are the same in size and colour, but the foliage is irregularly margined with white. It was raised in 1847 by Mr. Dodds, gardener to Colonel Barker, of Salisbury. The most expressive name would have been *Thunbergia aurantiaca variegata;* but as the plant has become known in nurseries by the name of *T. Doddsii,* and we are unwilling to deprive a persevering man of any portion of the honour he has acquired, we willingly adopt the popular appellation.—*Pax. Mag. Bot.*

FABACEÆ.—*Diadelphia Decandria.*

Swainsonia coronillæfolia (Salisbury). A very elegant greenhouse plant, not uncommon in collections, but much less grown than its merits deserve. The general habit resembles that of *Sutherlandia frutescens,* but it is superior to that plant, both in its growth and flowers. It is a native of New South Wales, and was introduced to this country by Sir Joseph Banks, so long ago as 1802. Its distribution has been pretty general, and its beauty invariably acknowledged. Yet it has failed to attract that attention from cultivators which some other plants, with far less charms, have ensured; and our present notice is given with a view of encouraging its more extensive cultivation. The axillary racemes contain numerous richly coloured flowers; the vexillum large, flat, of a violet-crimson, with a greenish-yellow eye; the keel of a rather deeper purple than the vexillum. The flowers are produced almost uninterruptedly for nine months in the year, and the plant always derives benefit, when the blooming season is over, by all the stems being cut down to six or eight eyes.—*Pax. Mag. Bot.*

CALENDAR OF FRUIT AND FORCING GARDEN OPERATIONS. DECEMBER.

Fruit Garden. Continue to prune, dress, and manure among the plantations where necessary, taking advantage of dry frosty weather for the latter operation, and spreading and digging in the manure as soon as possible after it is once on the ground, as if it be left long laying in heaps, a great amount of its fertilizing properties is taken up by the atmosphere, or washed through by the rain, and when spread afterwards, its effects are very slight, except in the immediate neighbourhood of where the heaps lay. Where necessary, form new plantations of gooseberries and currants, and if possible, keep them in an open quarter unshaded by large trees. Be careful to allow a sufficient distance between the rows of plants, and also between the plants in the rows, and avoid, as far as practicable, growing tall crops of vegetables among the bushes. Mulch the ground well round the newly planted bushes, and also about all recently transplanted trees, in order to protect their roots from frost, and also to prevent the rain beating the ground to a state of crust, which would prevent, in a great degree, the free action of the atmosphere below the surface. Proceed with the pruning and nailing of the wall trees in mild open weather, always using a board to stand upon, not only on account of personal warmth and comfort, but also to avoid too much treading on the borders.

Forcing Garden. If the earliest vinery was shut up last month, the temperature should be very gradually raised during this, with an increase of moisture also ; but both agents should be applied very carefully, especially in very wet, gloomy weather. If the first house is not started until about Christmas, begin with a temperature of about 45 to 50°, on no account getting above 60°, with bright weather, before the end of the month. Syringe the vines twice a day if not very gloomy weather, always using the water a few degrees warmer than the house. The first peach house may also be started about the middle or end of the month, but the temperature should not exceed 40 to 45°. Use very little water, but admit air freely when the weather will allow. Strawberries should be kept in a similar state ; rather dry, cool, and near the light. Admit air to them freely in all open weather. Keep dry such pineapples as may be about to start, or that are wanted to do so ; and use water very carefully to the others, giving only enough to keep them from being checked into a rest. Keep the house cucumbers free of useless shoots, stopping and laying in only the strongest, and not crowding them. Maintain a regular moist temperature of about 70 to 75°, admitting air on all favorable occasions, and maintaining the regular heat by increased firing, if necessary. Introduce fresh crops of asparagus, &c., as soon as the last crop is nearly half ready for use.

D. M.

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DICTIONARY
OF
HARDY TREES AND SHRUBS.

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THE DICTIONARY
OF
HARDY TREES AND SHRUBS.

ABIES, *Fir* (Salisbury.) Nat. Ord. *Coniferæ.* In this genus we are presented with some of the most familiar forms belonging to the very important order *Coniferæ*, in addition to which, the discoveries of modern travellers have contributed greatly to its interest, so that the group of true firs, as at present constituted, deserve equal attention with any other family of the same order. The greater part of the genus we readily know by their tetragonal solitary leaves, usually scattered in insertion, though some of the newer species, the products of North America, differ in having flat leaves, generally glaucous beneath, and imperfectly two-rowed in arrangement. *Abies excelsa*, or *communis*, as it was formerly called, is a native of Germany, Russia, and Norway, the last-named country furnishing a very large amount of its timber, under the name of white deal, to all the principal countries of Europe; this species is the Norway spruce of our nurseries; it is one of the tallest of European firs, with a straight slender stem, and, unless drawn up by thick planting, is for several years clothed with stiff horizontal branches that are evergreen, which, with the rigid character of its stem, and general hardihood, has induced its adoption as a nurse to other and more tender trees; for this purpose nothing can exceed it, the spread of the lower branches retains radiated heat, while its conical shape does not prevent the admission of sun-light and air to the interior trees, and as there is nothing flexible about it, danger from whipping does not arise. It does not flourish on such exposed or elevated situations as will the larch or common pine, but is infinitely superior to them as shelter for game, wherever it can be grown. There are upwards of twenty varieties of the common spruce fir grown as ornamental trees, among the most deserving of which may be mentioned, *Clanbrasiliana elegans, gigantea, pygmæa, monstrosa, Lemoniana, miniata*, and *pyramidalis.* The North American portion of the genus contains several very noble trees, particularly such as *Douglassi, religiosa*, and *Menziesii. Abies canadensis*, the hemlock spruce, is a singular low-growing tree, excellent for filling the front of masses of the taller kinds, as it will grow beneath their drip. The species *alba, nigra, rubra*, and *cærulea* are also of North American origin, and from them is obtained the celebrated spruce beer, which is made by macerating their young shoots in water, and the decoction is afterwards fermented with molasses. Except in the case of recent introductions, which have not yet attained a fruit-bearing size, all the kinds are increased from seed, the more common varieties being sown in the open ground, and the more valuable in pots; the seed is sown in April on light rich earth, at a depth varying from an inch and a half to barely a quarter of an inch, according to the size and vigour of the particular kind of seed, the exactly proper covering requiring considerable experience to determine. When the young plants are one or two years old, they are usually transplanted to nursery rows, though it is greatly preferable, where the opportunity exists, to finally plant them at the first removal, for frequent shifting is very injurious to them, and few plants bear carriage to a distance so badly as these. The drying of the roots by exposure to the air, or injury among the leaves by close packing, is seldom recovered, though nothing may be apparent at the time; and to transplant any that exceed three feet in height, the utmost care is necessary, or nine tenths die. The soil preferred by these trees is a dry mellow loam; they grow faster where moisture abounds, but are then short lived. When intended as nurses to a plantation, the firs should not exceed two years in age, except at the outside, where they may be larger, or, if convenient, the boundary may be formed a couple of years before the plantation is filled.

Propagation of the rare species has hitherto been effected by means of grafting or cuttings; the first mode is most usual, and by employing the free-growing common kinds, the operation is rendered pretty certain. In planting these, it is essential to provide them with an open situation, where they may have the requisite kind of earth of the description before mentioned; and that no danger may be incurred from accumulated moisture, it is always advisable to station each plant on a raised hillock, not a mere mole-hill sort of heap, where the probability is they suffer through the first year or two from the opposite cause—drought; but each mound should contain as much as it is probable the plants will require for eight or ten years; an elevation of about eighteen inches above the surrounding ground, and a diameter of four feet will give the quantity necessary, and keep the roots in an agreeable medium, they cannot then suffer from either cause. Attention to the training a perpendicular leading shoot will also be necessary, for if this gets injured from any cause, the beauty of the tree is destroyed, as it is seldom they form another, but become dwarfed and stunted in appearance. No pruning should be permitted among this family, beyond the removal of dead branches, and if properly planted, these are not likely to occur for many years. As a timber tree, the spruce fir is generally considered inferior to most others of the family in point of durability and strength; but its upright habit of growing makes it valuable for spars and poles used in ships, scaffolding, and other like purposes, the young wood being as durable as that of more mature age. All the species yield, by incision, a resin, from which turpentine and Burgundy pitch are manufactured; the bark of the hemlock spruce is also used as a substitute for oak-bark in tanning, being reckoned at half the value of the latter.

ABRONIA (Jussieu.) Nat. Order *Nyctaginaceæ.* Handsome trailing plants, fit occupants of the American quarter of the garden. There are two species, both from California. *A. melliferæ* is deciduous, and has white flowers, which expand in July, and *A. umbellata* is an evergreen, with red blossoms that are displayed in May. They require occasional protection in very severe weather.

ACACIA (Willdenow.) Nat. Order *Leguminosæ.* There are but two species of acacia which can be considered at all capable of bearing our climate, the remainder being stove or greenhouse plants; these are *A. Julibrissin* and *A. tetragona,* both very handsome, and deserving the little attention necessary to their preservation, especially the first named, whose delicate rose-coloured flowers, resembling tassels of silk, are exceedimgly elegant; those of *tetragona* are white. Both species form rather low-growing trees, and should be planted in a sheltered situation, in light loamy soil, and when severe frosts occur, it is advisable to protect the young branches with mats. Propagation is effected by layers; both are summer flowering trees.

ACER, *Maple* (Willdenow.) Nat. Order *Acerineæ.* The members of this genus are, for the most part, lofty deciduous timber trees, though a few assume the form of spreading shrubs, and one, *A. heterophyllum,* is evergreen; it is only the arborescent portion, however, that is worth attention. *A. pseudo-platanus,* the

Sycamore, is a very hardy tree, growing perfectly erect even on the most exposed parts of the sea coast. In the spring the bright green of its ample foliage is very pleasing, but, from the attraction offered to insects in the sweet juicy exudation of its leaves, and the quantity of dust this gummy substance collects, is soon rendered disagreeable.

A. platanoides, the Norway maple, is preferable as an occupant of ornamental plantations; it attains a height of fifty feet, and on good soil is a rapid grower, with leaves that are rather larger than those of the sycamore, and being always smooth, and of a shining green, are not liable to the objection offered to the other. In the spring, the bright yellow flowers of this species are very pretty, and in autumn its leaves die into almost an equally bright shade, when the effect created by its grouping with other trees of more sombre tints is greatly to be admired.

A. saccharinum. The sugar maple bears a close resemblance to the preceding, and is a fine tree. *A. striatum* is of smaller growth, and very ornamental, on account of its smooth stem being variegated with green and white bands, and the bright shining red of the smaller branches in winter.

A. opalus. The Italian maple is a noble tree, attaining a great height, and possessing large and handsome foliage, but the great litter its leaves and seeds make in autumn is sufficient to deter from planting in ornamental grounds. All the species yield more or less, by incision, a sweet juice, from which wine may be made; and in Canada a great quantity of sugar is obtained from the *A. saccharinum;* for this purpose the trees are tapped in the early part of spring, by boring an auger two or three inches into them, and in the hole a spout is fixed, through which the juice runs to a receiver placed at the foot of the tree: this is collected daily, and by boiling becomes granulated; the process is kept up for four or five weeks, and in suitable weather, during warm days and frosty nights, an ordinary tree will run off from twenty to thirty gallons of sap, yielding, when manufactured, about five or six pounds of sugar.

Maples require an open, loamy soil, where they grow rapidly, without much regard to situation or aspect: they may be propagated by layers in autumn, or cuttings in spring; but the best trees are obtained from seed, which is usually produced in great abundance; it should be sown in beds of sandy loam in April, covering it about an inch, and in the second year should be transplanted to nursery rows, to be again removed every second season till finally planted, which is best done between the fourth and eighth year of the plant's age.

ADENOCARPUS (Decandolle.) Nat. Ord. *Leguminosæ.* Handsome shrubs, with bright yellow pea-shaped flowers, which are displayed in June; four species are hardy, and the remaining two, *foliolosus* and *frankenioides*, are nearly so, only requiring to be matted up in severe weather. They make neat heads when worked by grafting upon the common Laburnum, or upon their own roots, as under shrubs are very desirable; increased by layers or seed.

ÆSCULUS, *Horse Chesnut* (Linn.) Nat. Ord. *Hippocastaneæ.* In our catalogues there are eight species of the Horse Chesnut enumerated, though, in all probability, a revisal of the genus would reduce it to about three; the remaining part wearing every appearance of varieties only, the chief difference existing in the colour of their flowers. Perhaps no other tree has ever given occasion for the exhibition of so much caprice on the part of those who would direct the public taste in matters of the sort: it has been alternately apotheosized and anathematized, as the geometric, picturesque, or gardenesque style has been prevalent. At its introduction, in or about 1620, it was regarded as much for its fruit as for its beauty, and continued a favorite till the ridicule of poetry expelled regularity from our gardens; when its "compact, lumpish, parabolic form" exciting the ire of the wits of that age, it was forthwith banished from view, till the reaction consequent on all violent impulses led to a reconsideration of its claims, and it was discovered that, though not absolutely necessary to constitute a perfect landscape, there are positions in which the Horse Chesnut may be very effective; and when the great number of its beautiful blossoms, especially those of the scarlet kind, (*Æ. pavia,*) are taken into consideration, together with the tender green of the ample foliage in spring, and its rapid development, the taste that would altogether exclude such objects must, we think, be defective. It is worthy of remark, the Horse Chesnut forms in the first fortnight of its seasonal action the whole of the current year's growth, frequently protruding several inches of new wood in a single night; young trees exhibiting this accumulation of their stature in a manner evident to the naked eye; the remainder of the season is, however, fully occupied in maturing this extraordinary development. Young trees of the common kind are readily obtained from seed, sown in February, and transplanted at one or two years to nursery rows, where they should stand rather thin, because of their rapid progress; on these, when from four to six years old, it is usual to graft the other species that are more difficult of propagation. Layering also may be practised with success in the whole of the genus, but it is then troublesome to form straight stems of sufficient height for standard trees. They grow best in rich, deep, and rather moist loam; we are acquainted with a fine specimen of the common Horse Chesnut, *Æ. hippocastanum,* which being planted by the side of a rivulet, has extended its roots completely over the stream, forming an arch of proportions almost as just as could have been effected by the mason, and serving now as a bridge. *Æ. discolor* and *parviflora* possess more of the suffruticose habit than the other members of the genus, and in large shrubberies are very ornamental; the species *carnea, pallida,* and *glabra,* are trees of the smallest class, being slow in growth, and therefore suitable for the fronts of plantations; the variegated variety of *hippocastanum* is very beautiful, and rather scarce.

AILANTUS or AILANTHUS (WILLDENOW.) Nat. Order *Terebinthaceæ.* The only hardy species, *A. glandulosus,* is a large fast-growing tree, with widely-diverging branches, and very large, unequally pinnate leaves; its inconspicuous green flowers are produced in a large terminal pedicle. It grows rapidly in all situations, and on poor gravelly soil outstrips all others; in isolated positions it is very ornamental, but does not group well. Increased by cuttings of the roots.

ALNUS, *Alder* (WILLDENOW.) Nat. Ord. *Amentaceæ.* Well-known timber trees, common on the margins of rivers, and in marshy places; the wood is recommended for works constantly under water, and is also esteemed in turnery. Treated as coppice, the poles from established stools grow fast and are durable; the bark is used both for tanning and dyeing. The only ornamental kind is a variety of the common *A. glutinosus,* with curiously cut leaves, called *laciniata,* suitable for damp places where few other subjects will succeed. Increased by layers.

AMELANCHIER (LINDLEY.) Nat. Ord. *Pomaceæ.* Very ornamental shrubs, with white flowers and red berries; they grow freely, and attain a considerable size in common mould of ordinary quality. They are very effective in the pleasure grounds through May, when their numerous flowers are displayed. Increased by seed or layers. *A. sanguinea* is sometimes called *Mespilus canadensis,* or *Pyrus sanguinea,* and *A. vulgaris* was formerly known as *Mespilus Amelanchier.*

AMMYRSINE (PURSH.) Nat. Ord. *Ericaceæ.* A small but interesting genus of American plants, having pretty white flowers, which are displayed in May and June. The only two species known, *A. buxifolia* (Syn. *Ledum buxifolium*) and *prostrata,* should be grown in peat, and receive protection from severe frost. Increased by layers.

AMORPHA, *Bastard Indigo* (LINN.) Nat. Ord. *Leguminosæ.* Free-flowering suffruticose plants, which thrive in good garden soil, but require to be matted in severe weather; there are near a dozen species and varieties, differing considerably in stature, all having bluish purple flowers. Propagation is easy, either by cuttings or layers.

AMPELOPSIS, *Virginian Creeper* (MICHAUX.) Nat. Ord. *Vitaceæ.* Hardy, deciduous, climbing plants, well adapted for covering walls, arbours, and the like; their suitability for such purposes is evidenced in the frequent employment of one species, the *A. hederacea*, or *quinquefolius*, as it is more often called; they grow fast in any soil, and in the autumn the crimson tint assumed by the foliage is very pleasing; they have also the advantage of requiring but little attention, as their tendrils and stem-roots enable them to lay hold of any surface and support themselves. They may be increased to any extent by cuttings or layers.

AMYGDALUS, *Almond* (LINN.) Nat. Ord. *Rosaceæ.* The ornamental portion of this genus is highly esteemed for the beautiful display of gaily-coloured blossoms it affords at a very early part of the year. The common and double flowered almond, the double blossom peach, and the dwarf and double dwarf almond, are all favorites in the flower garden and shrubbery. They delight in friable loamy soil, and should have an airy position open to the course of the sun, but sheltered on the northern side. Propagation is usually effected by budding upon the common plum stock, the stronger growing kinds at the height of standards, and the dwarfs considerably lower; their relative strength suiting the former for the interior of small groups of trees, and the lower growing kinds finding a fit position near the front of such masses, or the centre of flower-beds. The common almond produces seed abundantly when at maturity, and may be increased by its means; the product forming excellent stocks on which to work the other varieties.

ANDROMEDA. (LINN.) Nat. Ord. *Ericaceæ.* Very interesting evergreen shrubs, with white or pale pink flowers plentifully produced; most of them hardy, and many of neat ornamental growth. They require a peat soil to grow them well, and the situation should be a moist one, for several are strictly marsh plants, and those which are not have been obtained from Alpine regions, where the atmosphere is ever filled with moisture. Such species as *angustifolia, acuminata, calyculata*, and *speciosa* are good occupants of the central portions of large American beds, as they grow fast and rise sufficiently high for such a position; other and more dwarf species fitted for the front rank of such groups may be found in such as *Catesbæi, axillaris, polifolia*, or the beautiful *A. floribunda;* the last is besides a most excellent forcing plant, indeed, is highly ornamental in any position. *A. hypnoides* overspreads the ground like a moss, and adorns it with pretty red flowers in June and July. Increase is readily obtained by layers; seedlings may also be obtained, but are troublesome.

ARAUCARIA. (RUIZ and PAVON.) Nat. Ord. *Coniferæ.* The only hardy species is *A. imbricata*, the Chili Pine, one of the most noble and strikingly-ornamental trees yet known to us. Its erect, straight stem, marked with the scars of fallen leaves, its horizontal spreading branches, gradually lessening in length as they approach the summit, all armed with rigid angular leaves of the deepest green, and of extraordinary hardness and durability, conspire to make it remarkable in every situation. It requires a free loamy soil, into which it roots to a great extent, and then grows fast. The plant, both from its scarcity and peculiar outline, is adapted chiefly for planting singly, and should be elevated somewhat as before described; specimens which have been grown in pots for some time, will be found to have their roots spirally twisted, because of the obstruction offered to their outward course; in planting, these must be carefully straightened, or they continue to grow in the same manner, and consequently never obtain a firm hold of the ground, and the tree is then subject to be displaced or uprooted by winds; the same observation applies to all potted plants of the pine tribe, for it is remarked that in nearly every case they retain the inclination as long as they live; and hence the necessity of frequently shifting such as have to be kept in pots for any length of time. The propagation of this Araucaria is effected by seeds or grafting; the imported seed should be sown as soon as received on a gentle heat, a single seed being placed in a small pot filled with sandy loam; through the first year they require nursing in pits, and for two or three seasons after should be guarded from severe weather in cold frames, till they have attained about a foot in height, when they may be trusted in the open ground. Grafting is a delicate operation; the freest growing stocks should be selected from the common pine, and to effect a speedy union a little heat is necessary; and when complete it appears to be questionable if long-lived trees will result; we should therefore prefer seedlings, even if more expensive.

ARBUTUS, *Strawberry Tree.* (Linn.) Nat. Ord. *Ericaceæ.* Very handsome evergreen shrubs; the common *A. unedo* and its varieties are especially desirable, as nothing can exceed their beauty in the autumnal months, when they are covered with both flowers and ripe fruit; the latter closely resembling a scarlet strawberry. Of the varieties just mentioned, the most beautiful are *rubra, integrifolia,* both with pink flowers; and *schizopetala, salicifolia,* and *plena,* all with white blossoms. The dwarf species, such as (*Arctostaphylos*) *alpina, uva ursi,* and *phillyræfolia,* are pretty objects for rockwork or the fronts of American beds; the species *Andrachne, Menziesii,* and *procera* are fine objects for planting singly upon grass-plats, and are sufficiently hardy for all but the most exposed situations. Sandy loam or loam and peat grows them best, and they are readily increased by layers; the process of propagating by seed is so tardy as to be scarce worth the trouble.

ARISTOLOCHIA. (Linn.) Nat Order, *Aristolochiaceæ.* The hardy species are, for the most part, very rapid climbers, that in a season or two outstrip nearly all others we possess; they are, however, deciduous, and in winter exhibit their tortuous naked stems, where all before was clothed with such ample verdure; the contrast leaves an unpleasant impression that militates against their frequent adoption. The species *Sipho, tomentosa* and *Arkansa* are among the strongest growers, *clematitis, sagittata, pallida,* and *serpentaria* are dwarf species, which may be planted with other herbaceous plants. The whole have singularly formed flowers, more or less pitcher-shaped, and generally of a livid purplish hue. They grow in almost any description of soil, though the stronger it is the more rapid will be their progress. Increase of the climbing species may be carried to any extent by cuttings taken in summer, and of the others by division.

ARMENIACA, *Apricot* (Tournefort.) Nat. Ord. *Amygdalæ.* The ornamental species and varieties are, like those of the almond, very beautiful in spring; they require the same treatment and similar positions to the stronger kinds of that genus. *Armeniaca brigantiaca* is one of the earliest flowering trees we possess; its blossoms are pink, as also are those of *Siberica; dasycarpa* has white flowers, but those of its peach-leaved variety are rose coloured.

ATRAGENE. (Linn.) Nat. Ord. *Ranunculaceæ.* A valuable genus of hardy deciduous climbers, resembling in habit the well-known clematis, and like it well suited for covering arbours, walls, or trellis; the young flexible branches form a dense shade by Midsummer, and in autumn are ornamented with numerous flowers. *Americana* and its variety *obliqua* have purple flowers; those of the other kinds are yellowish-white. All of them grow freely in well-drained soil, which, if it has to be made for them, should be filled with broken bricks, stones, or such other material; the branches require to be cut back every season to within half their length, or they ramble beyond control. Increase is most readily accomplished by layers, though cuttings will strike under a hand-glass on a warm border in summer; seed is seldom produced.

AUCUBA, *Spotted Bay* (Kempfor.) Nat. Ord. *Cornaceæ.* One of the most useful of common shrubs is a proper character for the only species, the well-known *A. japonica*, whose large evergreen foliage, handsomely blotched with golden yellow, make it welcome in every garden. It matters little what may be the kind of soil or the aspect selected for it, the Aucuba will generally thrive, though it prefers a strong loam and a sunny spot when choice can be made; for grouping, or as an isolated specimen, it is equally useful; it bears cutting to almost any extent, and is consequently sometimes used as a hedge-plant, cuttings strike freely under a hand-glass in summer, and layers offer a ready means of propagating.

AUDIBERTIA. (Bentham.) Nat. Ord. *Labiatæ*. A pretty little evergreen shrub, with pale blue salvia-like flowers. The only species, *A. incana*, rises about a foot and a half high; it grows freely in common soil, and flowers through the summer months; may be increased by seeds or cuttings, both requiring the protection of a hand-glass to raise the young plants.

AZALEA. (Linn.) Nat. Ord. *Ericaceæ*. By the exertions of the horticulturist in continued cross-breeding, this genus has become replete with varieties that may be truly styled magnificent; their habits, colours, and season of flowering have been so multiplied and indefinitely varied, that the most difficult point in connexion with their adoption rests in selecting the best. There are about a dozen natural species, and these, by the means just mentioned, have been made the parents of some hundreds of varieties, many of them very far exceeding in beauty what even the most ardent mind would deem a vast improvement on the original forms. The Belgian cultivators have paid so much attention to this mode of improving the hardy Azalea, and introduced so many novel varieties, that all of the class are now commonly designated Belgian Azaleas, a compliment very justly directed. The derivation of the generic term Azalea, from *azaleos*, dry, arid, might lead us to suppose the plants would require some such place in which to grow, and the more so, when we read certain translators' intimations that the term is descriptive of the plant's habitat; practice, however, teaches in the most positive manner that it is not so; and it is probable the great Linnæus intended rather to describe the dry stick-like appearance of the branches when denuded of their foliage in his selection of the name attached to them. Be that as it may, a very little experience will teach that though Azaleas require well-drained soil, they also insist on a full and constant supply of moisture; indeed, few plants that are not inhabitants of a positive marsh, require more than do these through the whole of the active season; the miserable stunted development exhibited yearly by such as are existing in soil impervious to moisture will, at a glance, show the necessity of attention to this particular; at the same time, though it be so essential to secure them a proper supply of this aliment, it is equally important that any redundancy may have the means of escaping, before injury can arise to the fine silk-like fibres on which the plant depends. The soil which offers the most reasonable chance of meeting these requirements is a mixture of peat and loam, in proportions to be regulated by their texture: if very light or sandy peat has to be used, it may be well to mix an equal quantity of loam, or if the latter is of more than ordinary tenacity, a smaller proportion may be sufficient; and in the case of both being of an adhesive nature, it may be beneficial to add sand until the desired medium condition is secured. Too much care cannot be taken in this preparation of the soil, for on it most of the future results necessarily depend; in the absence of peat, rotten leaves may be employed to lighten the mass, though these are to be regarded only as a substitute, and by no means to the depreciation of the other material, peat being more suitable in every respect; this compost being well incorporated, should be laid at least eighteen inches deep over the space intended to be occupied by the Azaleas, and after being pressed pretty firmly, the plants may be stationed; and here we may remark, it is always better to have such plants as require this description of earth growing together, than spread among those of another character, because of the extra trouble occasioned in providing so many separate beds of soil for them, and the probability of these small quantities becoming incorporated with or deteriorated by the surrounding earth, to say nothing of the additional effect created by the plants when viewed together.

In planting, the roots must be carefully covered in with the finer portions of the soil, and at the finish it should be pressed rather firmly together, so as to keep the plant securely in its place. Through September and October may be regarded as the best time for transplanting this genus, or if it cannot be done then, no other period is so good as the end of February or the earlier part of the following month, taking care to have them all placed some time before they begin to grow. Pruning must be cautiously performed, and in healthy specimens is seldom necessary, except to restrain an over luxuriant branch; a weak plant may sometimes be benefited by close pruning, though it is always better to improve it at the roots than in any other manner. Through the summer succeeding their removal, it may be necessary to supply them frequently with water, always observing to give sufficient to thoroughly moisten the whole of the earth, and to repeat it as occasion may point out. Propagation of this class of Azaleas is usually performed by layers made in the autumn; these are generally rooted by the succeeding autumn, and are then taken off, and treated as separate plants. Cuttings also may be struck under hand-lights, on a warm border, or in a spent hot-bed; the half-ripened wood forming the cuttings. New varieties are obtained from seed, and to ensure diversity, it should be cross impregnated; it should be sown in February, in pots of sandy peat, the surface should be pressed smooth and firm, and the seed evenly scattered over it, and covered with a very thin layer of sand; the pots should stand in a very gentle heat till the young plants make their appearance, when it will be necessary to harden them gradually, and when large enough, they should be potted off, and kept in cold frames till strong enough to bear the open air. The following are a few good varieties: *alba*, white: *alba plena*, double white; *blanda*, blush; *carnea*, pale red; *chrysolecta*, yellow; *cuprea*, copper; *Coburghii*, scarlet; *corymbosa*, scarlet; *dealbata*, white; *discolor*, white and scarlet; *fastigiata*, pink; *flammea*, red; *florida*, pink; *grandiflora*, orange; *incana*, pink; *ignescens*, red; *incarnata*, flesh; *lepida*, striped; *mirabilis*, scarlet; *magnifica*, red; *odorata*, white: *papilionacea*, striped; *partita*, white and red; *penicillata*, white; *purpurescens*, pale purple; *purpurea*, deep purple; *pur. plena*, double purple; *rosea*, pale red; *ruberrima*, deep red; *rutilans*, dark red; *scintillans*, shining orange; *splendens*, deep orange; *Stapletoniana*, rose; *tricolor*, scarlet and white; and *variegata*, red and white.

BENTHAMIA (LINDLEY.) Nat. Ord. *Cornaceæ*. But one species known. *B. fragifera* is a handsome evergreen plant, bearing a profusion of yellowish-red flowers through the summer, that are succeeded by an equally great number of large, globular, yellowish berries, which are eatable, though rather insipid. Except in exposed places, the plant is sufficiently hardy to withstand our winters; it makes the best appearance against a south wall, and is then perfectly secure from the viscissitudes of the weather. It grows in ordinary garden soil, and is increased by layers or seed.

BERBERIS, *Barberry* (LINN.) Nat. Order *Berberaceæ*. A rather extensive and very ornamental genus of under shrubs, partly evergreen, that portion being the handsomest; a familiar example may be found in the *B. aquifolia*, a shrub inferior to very few, either as regards its fine, glossy holly-like foliage, or the number and brilliancy of the yellow blossoms displayed in early spring, and succeeded by deep purple berries, which ornament it through the winter. Most of the species have an erect slender habit of growth; the flowers of the whole are yellow, and generally produced in abundance, rendering the plants very gay in spring, and subsequently the berries help to embellish them, some having a crimson and others a purple hue; several of the more recent introductions are particularly valuable in this respect. They delight in a very open loamy soil, do not object to the drip of trees if not too heavy and the ground is drained, and may be readily increased by cuttings, layers, division, or seed; the common barberry forms excellent cover for game in summer.

BETULA, *Birch* (LINN.) Nat. Ord. *Amentaceæ.* The greater part of the genus is composed of handsome trees, valuable alike for their beauty, rapid growth, and sound timber. *B. pendula* is a remarkably graceful tree, not inaptly termed the queen of the woods. *B. lenta,* the mahogany birch, is a very fast-growing tree, its wood is close grained and prettily variegated, admirably adapted for cabinet work. *B. populifolia* and *papyracea* are of similar character. *B. nana, pumila,* and *fruticosa* are dwarf bushes, suitable for underwood; all the species are more or less fragrant, the bruised leaves emitting a pleasant aroma.

The birch delights in deep alluvial soils that are not subject to stagnant moisture, where it increases in bulk at a rate exceeding most other trees. The species which assume the character of trees are usually increased by seeds, and the dwarf kinds of layers.

BIGNONIA (LINN.) Nat. Order *Bignoniaceæ.* The limited number of hardy species belonging to this are very rapid climbers, bearing ample pinnate leaves and large showy flowers. *B. radicans* is remarkable for its very large red blossoms, and the extent to which its branches will run in a season, and is therefore commonly employed to cover walls in the open air; and *Cupreolata* is but little inferior in vigour, and is somewhat superior in the brilliancy of its flowers; they are scarlet. Both species require a treatment which may be compared to that usual with the grape vine when grown in the open air, and are increased by cuttings of the mature wood taken off in spring, and struck under a hand-glass upon a warm border. They delight in strong rich soil.

BROUSSONETIA, (L'HERETIER.) Nat. Ord. *Urticaceæ.* The two species known, *B. papyrifera,* or paper mulberry, and *B. spatulata,* are low-growing trees which thrive in damp situations; they form wide-spreading heads, and have large leaves which are various in shape; those of the male and female plants differing so much as to be scarcely recognisable; the latter produces a small black fruit. The Chinese make paper of the bark of the first-named species, and the Otaheitans a superior description of cloth; in both countries the paper mulberry is extensively cultivated for these purposes.

BUDDLEA (LINN.) Nat. Order *Scrophulariaceæ.* This genus, though containing several species, natives of the higher regions of South America, possesses but two which are capable of bearing a full exposure to our climate: these are, *globosa,* a well-known fast-growing shrub, with large rugose foliage, and heads of handsome orange-coloured flowers, succeeding in a warm situation on strong loamy soil; the other is of more recent introduction, and is called *B. Lindleyi;* it is a native of China, has smaller leaves than the other, and a closer and more compact manner of growing; its flowers are produced on loose spikes, and are purple; like the other, it requires a warm sheltered position, and makes the best appearance when trained to a wall.

BUXUS, *Box tree* (LINN.) Nat. Ord. *Euphorbiaceæ.* This is one of our most useful shrubs, being neat in habit, densely clothed with evergreen foliage, hardy, and easily accommodating itself to circumstances; it thrives on dry poor soil, and will bear the drip of tall trees. Of the English box tree there are five varieties, the common, the narrow-leaved, the silver, and gold striped; all of which attain the stature of large shrubs, and the dwarf, which is especially adapted for edges to flower beds and borders. Besides these, there are the Minorca and Chinese species, the first having larger and more handsome foliage, the latter being rather tender, requires some slight protection in severe weather. The readiness with which the whole of these shrubs bear severe pruning and constant clipping, made them favorites when the custom of training plants into the fancied resemblance of animals and other objects prevailed, and the same character points them out as being suitable for boundary hedges in the pleasure grounds where an impermeable blind near the surface is required; the common box forms one of the best inclosures if kept under four feet in height, and will grow where the land is too poor for most other plants; nor will cattle bite it. As a shrubbery plant, its value is well known, being without a rival for filling the bottom of masses of trees.

The box is found in a natural state in most European countries; formerly it was plentiful in England, and still exists in considerable quantities in parts of Switzerland and France. It is common also in Asia, abounding in Persia and China, and is occasionally met with in America; its wood is highly esteemed for many purposes, being very hard, with little grain, and capable of taking a very smooth surface. English box is preferred for engraving upon, but for other works, that of the Levant is most esteemed.

CALYCANTHUS, *Allspice tree* (LINN.) Nat. Ord. *Calycantheæ.* Small North American shrubs, remarkable chiefly for the agreeable aromatic fragrance of their blossoms. There are five species: all are deciduous, and have chocolate-coloured flowers, which, though destitute of petals, are not the less interesting; the loss being compensated in the large coloured calyx. The plants are rather tardy of propagation, which is best effected by means of layers. They grow in any good garden earth.

CAPRIFOLIUM, *Honeysuckle* (ROMER and SCHULTES.) Nat. Order. *Caprifoliaceæ.* An extensive and admired genus of hardy, deciduous, and evergreen climbers. The common honeysuckles, (*C. Periclymenum*) or woodbine, is very generally employed to cover arbours and walls; all the species are equally suitable, more especially the evergreen kinds, the most familiar of which is the *C. sempervirens* or trumpet honeysuckle. The best of the deciduous kinds are the red Italian, the Roman with orange blossoms, the Dutch variety of the common woodbine with large yellow and red flowers, and the oak-leaved variety of the same. Among the evergreen kinds, those to be preferred are the Minorca *implexum*, with red and yellow blossoms; *gratum*, red; *flavum*, yellow; and *japonicum*, orange; the last two are somewhat tender, and should be covered with a mat in severe weather. Honeysuckles delight in light rich earth, and should be pruned closely every autumn; they are increased by seed, which should be sown as soon as ripe, and by cuttings, which may be taken any time in autumn, and strike root readily in a shaded border.

CARAGANA, *Siberian Pea tree* (ROGEN.) Nat. Ord. *Leguminosæ.* A genus of handsome shrubs, with yellow pea-shaped flowers; the only exceptions to this description being found in one of the varieties of *C. Altagana*, which assumes the form of a tree, and in the colour of the flowers of *C. Halodendron*, which are purple. Some difficulty has been found in propagating the species which has had the effect of keeping them scarce in gardens. They grow best in sandy loam, and are most readily increased by grafting upon Robinia stocks. *C. Halodendron* is a native of the salt fields of Siberia, and it is suggested, to cause it to flower freely, that salt be mixed with the soil in which it is grown.

CARPINUS, *Hornbeam* (LINN.) Nat. Ord. *Amentaceæ.* Timber trees of this kind are scarce, but for coppice wood and hedges, the hornbeam is extensively grown; it is quick in growth, and in three years from cutting over, useful rods are obtained, which are tough and durable. It has nothing to recommend it as an ornamental tree, and being more profitable when grown for poles, is seldom allowed to assume a larger size; a rather dry but deep loamy soil grows it best, and being very hardy, is often selected for hedges in bleak situations where shelter is desirable. In the nursery, the young plants should be replanted every third year, and the tap root removed. Of the common hornbeam, *C. Betulus*, there are three varieties, one of them having variegated foliage is occasionally admitted to large shrubberies; as a tree, *C. Orientalis* is the most beautiful.

CARYA, *Hickory* (NUTTALL.) Nat. Ord. *Juglandaceæ.* With us these trees are grown mainly for their timber; and, as they attain a great size and have strong tough wood, which is also very light, are much esteemed for agricultural implements, gun-stocks, &c. In America they are cultivated also for their fruit; that of *C. olivæformis* or the Pekan nut is delicious; *C. sulcata* also produces a large and tolerably well-flavoured nut, known as the Gloucester or Springfield nut; those of the common hickory are called by country people pig-nuts. Young plants are obtained by sowing the nuts in February in sandy earth, and they should subsequently be transplanted twice in the nursery before their final remove. They delight in calcareous soil, and ultimately attain thirty or forty feet in height.

CASTAÑEA, *Chesnut* (GÆRTNER.) Nat. Ord. *Amentaceæ.* As a timber tree the chesnut is second only to the oak; it attains quite as large a size, and the wood is nearly as durable and strong; it is also very long lived, as some of the oldest trees in the world are of this kind, among them is the chesnut of Tortworth, in Gloucestershire. As coppice wood, it is considered the best we have, and for large poles little else is now grown. For purposes of this kind it is best to raise the plants from nuts, and when two years old finally plant them without cutting the downward roots. They like a dry soil, but do not refuse to grow where it is damp, though from such positions the wood is less durable; the poles are cut from four to seven years old, according to the use they are required for. As an ornamental tree, there are but few which may boast the noble aspect of these, their outline closely resembling that of the oak, and the foliage possessing a brighter and more pleasing green. The *Castanea pumila* is a very low growing tree, or rather shrub, as with us it seldom exceeds eight or ten feet in height; its fruit is called by the South Americans chinquapin nut, and is very sweet.

CATALPA (JUSSIEU.) Nat. Ord. *Bignoniaceæ.* The only hardy species (*C. syringifolia*), is a fast-growing tree, with large pale green foliage and pretty white and rose flowers; the succulent nature of the young shoots render them liable to injury in the cold or windy weather of autumn, and it is therefore advisable to plant this tree on the margins of shrubberies, or where they may be slightly sheltered from the excessive power of frost and wind. It is increased by layers or cuttings, and when the trees reach a good size they flower pretty freely, a condition that may be induced on small plants by root-pruning.

CEANOTHUS, *New Jersey Tea* (LINN.) Nat. Ord. *Rhamnaceæ.* The hardy species of Ceanothus are deciduous shrubs of variable heights, having for the most part white flowers; but few of them possess much beauty. The *C. azureus*, however, differs materially; it is evergreen, and though not quite hardy enough to withstand a complete exposure to the severities of our seasons, succeeds admirably against a south wall, where its beautiful pale blue flowers are displayed in April, and afford a great treat at that time. They all delight in a soil composed of peat and loam, and may be increased by layers or cuttings struck in summer beneath a hand-glass.

CEDRUS, *Cedar* (MILLER.) Nat. Ord. *Coniferæ.* *C. Libani*, the celebrated cedar of Lebanon, is so well known and esteemed for its bold picturesque outline as to need no description. It is usually planted as a single specimen, and to give expression and force to the front of other round-headed trees, perhaps nothing can exceed it; but it should always be kept at a considerable distance from the residence or dressed portion of the grounds; its dark evergreen foliage being too sombre to harmonize with such objects. The more recent species, *C. deodara*, is one of the most graceful of the whole tribe, its beautiful light green leaves dancing in the breeze upon the half-pendant branches, together with its pyramidal outline, inducing the idea of a verdant fountain; what the first effects by its startling boldness and vigour, is here obtained by a chaste and graceful elegance;

for the extremity of lawns, the slope of a turfy dell, or other spot requiring a pleasing evergreen specimen to contrast with ordinary forms, no plant is more suitable than the Deodare. Both the species require the soil for them to be well drained, and the nigher it approaches to a deep hazel loam, the better chance of success they will have. Propagation is managed by seeds when they can be obtained, or otherwise with the deodare by grafting upon the common larch. To raise the seeds, the same course must be followed as recommended for Araucaria.

CELTIS, *Nettle tree* (TOURNEFORT.) *Ulmaceæ.* The hardy kinds are low growing trees, with one exception, found in the *C. Australis,* which is accounted one of the largest trees of the south of Europe, frequently reaching a height of forty feet; none of the others exceed half that height. They have oblong or ovate acuminate leaves finely serrated at the margins, and inconspicuous flowers. The wood is remarkably hard and flexible, and is esteemed by coach-makers for their framing; it is usually imported, but may be grown with success in this country. The species produce small berries which resemble a black cherry, and are eatable; from these increase of the plants is readily obtained, or by means of layers.

CEPHALANTHUS, *Buttonwood* (LINN.) Nat. Ord. *Cinchonaceæ.* An ornamental shrub, growing five or six feet high, and bearing large light green leaves; the shoots terminating in globular heads of white flowers about the size of a musket-bullet. It requires a peat soil, and is most effective in scattered groups on the margins of other plantations; increased by cuttings struck under a hand-glass.

CERASUS, *Cherry* (JUSSIEU.) Nat. Ord. *Rosaceæ.* Among this genus there are some highly desirable low trees and shrubs, which, for the beauty of the flowers displayed in early spring, should have a place in every shrubbery. Indeed the whole of the group not cultivated for their fruit, may be judiciously introduced in the ornamental garden; they grow in almost any kind of soil, and their blossoms in spring lend a charm not otherwise obtainable. Propagation is effected by budding upon stocks of the wild cherry.

CERCIS, *Judas tree* (LINN.) Nat. Ord. *Leguminosæ.* Ornamental dwarf trees, with singular orbicular heart-shaped leaves, and numerous pea-shaped flowers, borne on the preceding year's wood; those of *C. Siliquastrum,* the European Judas tree, are purple; the other species, *C. Canadensis,* has green flowers. They prefer a light loamy soil, and in a sunny spot flower abundantly. On the Continent the blossoms are frequently eaten in salads, and esteemed for their agreeable poignancy. Raised by layers or seeds. Gerarde says, "This is the tree whereon Judas did hang himselfe; and not upon the elder tree, as it is said."

CHAMÆLEDON (LINK.) Nat. Ord. *Rhodoraceæ.* One of the most interesting of our native plants. It is of confined trailing habit, rising a few inches from the ground, and producing its pretty pink blossoms copiously. We have but one species (*C. procumbens*) and that is somewhat rare; it grows best on shaded slopes of peat soil, and may be increased by layers. It was formerly included in the genus Azalea, and is even now commonly known as *A. procumbens;* another synonyme is *Loiseleuria procumbens.* For rockwork, or the fronts of American beds, the neat spreading dwarf habit of this plant renders it particularly desirable.

CHIMONANTHUS (LINDLEY.) Nat. Ord. *Calycanthaceæ.* The beauty and fragrance of this plant render it a favorite in every garden. Its blossoms are displayed in mid-winter, and, being large, numerous, and gaily coloured, with bright yellow and red, are very attractive, which with their delicious scent, leave nothing to be desired. It is quite hardy, and flowers profusely against a south wall. Potted and brought into the green-house, it is a great assistance to the forced flowers of winter, and in the sitting room flourishes when most other things fail to afford interest. There are two varieties of the original species, that called *grandiflorus* is preferable, because of the larger size of its blossoms; peat and loam suit it best, though it does not refuse to grow in common soil. Increased by layers or cuttings struck in a little heat.

The species *C. fragrans* was formerly known as *Calycanthus præcox*.

CHIONANTHUS, *Fringe tree* (LINN.) Nat. Ord. *Oleaceæ*. There are three species of fringe tree, two of them, *axillaris* and *maritima*, are shrubs, attaining eight or nine feet in height; the other (*virginica*) assuming the form of a low tree. All have numerous pure white flowers, and are desirable in extensive shrubberies. They grow in common soil, and are increased from seed, or by grafting on the common ash.

CISTUS, *Rock Rose* (TOURNEFORT.) Nat. Order. *Cistaceæ*. A large genus of dwarf evergreen shrubs, most of them producing gaily-coloured flowers, which are very fugacious, but being produced in a continuous succession, are desirable among other shrubs; the principal objections to be taken to the extensive employment of the genus lies in their tender character, as they are liable to injury in severe weather, and often become unsightly by the decay of the lower branches. *C. cadaniferus*, or gum cistus, is the most common; it is larger than most others, and has showy white flowers, the base of each petal having a distinct spot of rich crimson. *C. ledon*, white; *undulatus*, purple; *platysepalus*, red; *creticus*, purple; and *acutifolius*, white,—are among the most esteemed of the dwarf species, and are well suited for rockwork or the front of a small border of shrubs, and of the larger growing kinds, such as *populifolius*, white; *villosus*, purple; and *laurifolius*, white, may be selected. They grow best in light well-drained soil, and are readily increased by layers or cuttings struck under a hand-glass. It is advisable to preserve duplicates of the smaller sorts in pots, protected with a frame through the winter, as in some seasons those exposed are often much injured, or possibly killed.

CLEMATIS, *Virgin's Bower* (LINN.) Nat. Ord. *Ranunculaceæ*. The hardy species mostly are deciduous, or evergreen climbers, of rapid growth, abundant bloomers, and delicious fragrance. *C. flammula*, *florida*, *grandiflora*, *Sieboldii*, and *viticella* are favorite species for trelliswork or covering walls. They thrive in any good soil, and are readily increased by laying the young shoots in summer; close pruning is necessary every autumn, in order to keep them manageable, but when growing the shoots must be allowed to run as far as they will, because the flowers being produced near the end, any pruning at that time would have the effect of removing the blossoms. Seeds are sometimes produced, and afford easy means of obtaining a stock of plants; it should be sown when ripe in a cool place, and the young plants will appear in the following season.

CLETHRA, (LINN.) Nat. Order. *Ericaceæ*. Pretty North American shrubs, with white bell-shaped flowers, produced in autumn. They require peat soil, and are fit companions to rhododendrons, and such shrubs, usually denominated American plants. In habit they are generally more erect thon those just named, and should therefore be stationed behind them. They are commonly increased by layers, but may be struck under a hand-glass, or propagated from seed sown on a little heat.

COLUTEA, *Bladder senna* (LINN.) Nat. Ord. *Leguminosæ*. Very free growing deciduous shrubs, with copious yellow, orange, or scarlet flowers; adapted for extensive plantations, and excellent to fill the space beneath large trees; they succeed also in confined smoky districts, and are therefore suitable for suburban gardens. Their flowers are produced through the greater part of the summer, and are succeeded by singular membraneous inflated pods, containing several seeds, by which increase is readily made, or the branches may be laid in autumn, and will be fit for removal in the next. *C. arborescens*, yellow; *cruenta*, scarlet; and *media*, orange, are the best.

COMPTONIA. (BANKS.) Nat. Ord. *Myricaceæ*. The only species, *C. asplenifolia*, is a pretty shrub, to be admired chiefly for its elegant foliage; the flowers are brown and inconspicuous. It requires a sandy soil, either of peat or loam, and may be increased by layers or suckers, which are plentifully produced on established plants.

CORNUS, *Dogwood* (LINN.) Nat. Ord. *Caprifoliaceæ.* That portion of the genus Cornus attaining the stature of trees, has long been celebrated for its hard durable wood, which, considering its rapid growth, is a very remarkable circumstance. The shrubs are also fast growers, which flourish in almost any kind of soil, and under the drip of trees; the whole are particularly effective in plantations through the winter, on account of their bright green, red, purple, or striped bark. *C. mascula,* the cornel cherry, blooms as early as February, and in autumn is loaded with its handsome fruit, which were formerly eaten. *C. sanguinea* is commonly planted among shrubs for its brilliant vermilion-coloured twigs. *C. florida* is very handsome in March and April, on account of its numerous large snowy white flowers, and *C. cericea* is valued in the shrubbery for its large downy leaves, terminal branches of white flowers and blue berries. All are easily propagated by layers, cuttings, or seed.

CORONILLA (NECKER.) Nat. Ord. *Leguminosæ.* There are two hardy shrubs contained in this genus, one of them, the *C. Emerus,* is a popular free flowering plant, which well deserves extensive adoption for its neat habit and pretty red and yellow flowers; the other, *C. iberica,* is a trailer, with orange blossoms, less beautiful than the former, but interesting among rockwork. They prefer a light loamy soil, and will grow beneath large trees, if not stationed too close. Readily increased by layers or seeds.

CORYLUS, *Nut tree* (LINN.) Nat. Ord. *Amentaceæ.* The common hazel nut is frequently grown as coppice or under-wood, the rods being useful for hoops, hurdles, crate-making, and other purposes. They grow best on deep loamy soil, and may then be thickly planted; the cutting is seldom left beyond the fourth season, as anything more than rods are not expected, the branching habit of the plant preventing the growth of poles. Nut trees are not uncommon in ornamental plantations, for they thrive remarkably well as under-growth, and help to thicken screens.

Increase is obtained by layers, suckers, and seeds.

COTONEASTER (MEDICUS.) Nat. Ord. *Rosaceæ.* Low growing ornamental shrubs, which seldom exceed three or four feet in height. *C. rotundifolia* and *microphylla* are popular evergreens of dependent, almost trailing habit; they have small coriaceous, deep green leaves; their flowers are small and inconspicuous, but are succeeded by red berries, which in winter materially enliven the bushes; a remarkable habit of these plants has been lately pointed out in their inclination to grow northwards; in the majority of cases it will be found the head of the plant inclines from the sun, instead of towards it, as is usual with most other shrubs. All the species grow freely in common soil, and are easily increased by layers or seeds.

CRATÆGUS, *Hawthorn* (LINN.) Nat. Order, *Rosaceæ.* The several species of hawthorn furnish some of the neatest ornaments the planter possesses, their judicious employment admitting a finish not otherwise obtainable; their neat foliage, and profuse habit of flowering render them extremely pleasing in spring, and in autumn and winter they are equally interesting, by reason of their bright and various coloured berries. The thorn in age is one of the most grotesque trees we have; the rigid contortions of its stem and branches are bold and striking, and as single specimens or in scattered groups upon an extensive lawn or park, nothing is more effective. *P. oxyacantha,* the common hawthorn, is an invaluable hedge plant, and as such is being extensively used; its varieties, the double red and white flowering thorns, are very beautiful, and as short standards in the shrubbery are very desirable, as also is the yellow berried variety, which in autumn is particularly conspicuous. *C. pyrifolia, flava, crus-galli, eriocarpas, tanacetifolia,* and *cordata* are all beautiful species; and in fact there are none but what deserve a place wherever they can be grown. *C. pyracantha* is an admired species, for training against walls, where its bunches of bright red berries are very ornamental in winter. They all delight in rich loamy soil, which, however, must be well drained: they will grow anywhere in preference to a wet situation. Propagation is carried on by means of seed and grafting. All but the double-flowering kinds produce seed in abundance, this should be collected in autumn, and buried in damp sand till the following February, when it may be sown in beds of light earth. Some of the plants will come up in the same season, and the remainder in the year following. They should be transplanted when two years old, and at four years are best for final removing. The double varieties are usually grafted in March, on stocks of the common hawthorn, and may be worked at any desirable height. Hawthorn or quickset hedges should be formed of two years old plants, as they generally remove better at that age; they should be well attended for the first few years, and by constant clipping will become well filled at bottom, and impervious to cattle of all sorts.

CUPRESSUS, *Cypress* (LINN.) Nat. Ord. *Coniferæ.* The travels of modern botanists have added much to our knowledge of coniferous plants, and this genus, among others, has been considerably increased, both in number and interest; we have yet, however, to prove if some of the most beautiful additions are sufficiently robust to bear our climate. *C. sempervirens,* the common cypress, is an erect growing evergreen tree, effective when used sparingly among others, but of too sombre appearance for planting in quantity near habitations; some of its varieties are interesting in habit, as in the case of *pendula.* *Cupressus torulosa* we have found hardy in slightly sheltered situations, and is much more beautiful, and having leaves of a more lively green, is admissable in ornamental grounds. *C. thugioides* is also, on this account, to be preferred to the common species. For cemeteries and churchyards they are peculiarly fitted. Propagation is effected by seeds sown in spring, on a gentle heat; the plants delight in dry loamy soil, and require no pruning.

CYDONIA (JUSSIEU.) Nat. Ord. *Rosaceæ.* The only species of which we have now to speak is the *C. Japonica,* better known, perhaps, as *Pyrus Japonica,* or Japan pear; this is a beautiful shrub, clothed with bright green leaves in summer, and with its gaily coloured blossoms in early spring; the flowers of the species are bright red, and there is a variety with delicate rose- or blush-coloured flowers. It is grown either as a dwarf shrub or trained against a wall, in either manner it is much admired. A loamy soil appears to grow it best, nor is it material whether the situation be moist or dry; the only certain mode of propagating is by layers which should be formed in autumn of the current year's growth.

CYTISUS (LINN.) Nat. Ord. *Leguminosæ.* In this genus we have several esteemed shrubs and low trees indispensable to ornamental planting; the common and Scotch laburnum being of the latter class, and a numerous assemblage of pretty free flowering deciduous plants forming the first. Laburnums are universally grown, for they flourish in the most unpromising situations, and in spring are amongst the most attractive of our trees; they are usually raised from seed, which is plentifully produced, and in good soil form flowering specimens in six or seven years. Upon them are sometimes worked the purple flowering cytisus, and when growing together, these and the yellow flowers of the laburnum afford a striking contrast. The shrubby species are rapid growers and flower abundantly, though an objection may be taken to some on account of their woolly leaves, which retain the dirt, so as to become disfigured long before the season for their existence is over. They grow well in any ordinary soil, and are easily increased by layers or seed.

DAPHNE (LINN.) Nat. Ord. *Thymelaceæ.* A genus of dwarf shrubs, for the most part evergreens, and though but few boast any great beauty in their flowers all are fragrant, and from their compact habit and free growth, even in densely shaded places, are favorites in most gardens. The spurge laurel (*D. laureola*) is an excellent plant for filling the fronts of shrubberies, as it has rich velvety evergreen foliage and never becomes bare at the bottom. *D. cneorum* and *D. mezereon* are both distinguished by their handsome flowers of a deep pink, the first is a very dwarf plant, suitable for the front rank of American beds, the other grows from two to three feet high, and its branches are clothed with flowers at an early period in spring; the species *colina*, and its variety *neapolitana*, have purple flowers, but they are small and inferior to the preceding. All of them prefer a moist peaty soil, and require little or no pruning; they are propagated by layers or suckers, and a few of the rarer kinds by grafting upon the spurge laurel, in doing which it is essential to draw the earth above the point of union, and to keep the plants covered and closely shaded till the scion has taken hold. The mezereon and spurge laurel are both natives of Britain.

DECUMARIA (Linn.) Nat. Ord. *Philadelphaceæ.* Two of the species are ornamental deciduous twiners, with small white flowers, and the third (*D. prostrata*) is a trailer. They grow anywhere, and are increased by layers or cuttings struck under a glass.

DEUTZIA (Thunberg.) Nat. Ord. *Philadelphaceæ.* These beautiful shrubs are alike remarkable for their compact habit of growth, rich, deep green persistent foliage, and numerous white, bell-shaped flowers, which are fragrant. Either for beds, borders, or as single plants on the lawn, both the species are most efficient subjects, and they may also be potted and forced at a very early period into bloom. They delight in a soil composed of peat and loam, and may be increased by layers or seed. *Deutzia scabra* produces seed plentifully, but of the more recent species, *D. staminea*, we have no knowledge in this respect; it, however, may be struck from cuttings placed on a little heat.

DIERVILLA (Tournefort.) Nat. Ord. *Caprifoliaceæ.* A desirable dwarf shrub, with yellow flowers which open in spring. The only species, *D. flava*, is allied to the honeysuckle, and is suitable for the fronts of shrubberies. It grows in common soil, and may be multiplied by cuttings or layers.

DIOSPYROS, *Date Plum* (Linn.) Nat. Ord. *Rutaceæ.* There are three species of this genus which are sufficiently robust to bear our climate. *D. lotus* is a native of Italy, and produces a fruit which was supposed to cause oblivion; it is about the size of a cherry, yellow when ripe, sweet and astringent; the other two are derived from North America. *D. Virginiana* has a white, brittle wood, and fruit like the ordinary date, and almost its equal in flavour. *D. pubescens* is inferior in the latter respect. All of them form handsome trees about twenty feet in height, and succeed in loam of a sandy nature. The first is usually cultivated by layers, and the others by seed or cuttings.

DIRCA, *Leatherwood* (Linn.) Nat. Ord. *Thymelaceæ.* A pretty dwarf shrub, with yellow flowers; it was obtained from the swampy marshes of North America, and with us succeeds either in a peat soil or sandy loam, and is propagated by layers or seeds. The young twigs are remarkably tough, and hence its English name; in its native country it is used for basket-work. *D. palustris* is the only species.

DRYPIS (Linn.) Nat. Ord. *Silenaceæ.* A beautiful little trailing plant, suitable for ornamenting rockwork, in which situation it produces its pale purple, starry flowers in great abundance. It grows best in peat and loam, and should be propagated by cuttings, a stock being secured each season, as it is somewhat short-lived. *D. spinosa* is the only species.

ELÆAGNUS, *Oleaster* (Linn.) Nat. Ord. *Elæagnaceæ.* There are three species of Oleaster, hardy in our climate; they are ornamental, rather tall trees, with lanceolate, silvery-looking leaves, closely resembling in general appearance the olive; they are apetalous, but sometimes produce thin, large, green fruit, which is eaten in the countries whence the trees are derived. All of them grow freely in porous soil, and are increased by layers, or cuttings of the current year's wood, taken off early in autumn, and struck in a warm shaded border.

EMPETRUM, *Crow-Berry* (LINN.) Nat. Ord. *Empetraceæ.* Very hardy, dwarf evergreen shrubs, resembling the common heather, than which it is even more hardy, being usually found on exposed moors and bleak mountain situations. There are two species, both having apetalous flowers, followed by numerous purple berries; they are desirable for large masses of rockwork, or in unsheltered places where little else will grow. Peat soil is requisite, and they are propagated by layers, or from seed.

EPIGÆA (LINN.) Nat. Ord. *Ericaceæ.* There are two species of these pretty trailing shrubs; they are evergreen, and being natives of elevated districts in North America, are quite hardy with us. *E. repens* has white flowers, and in *E. rubicunda* they are suffused with a deep blush colour. Their stems emit roots in their progress, and thus the plants are readily propagated. For rockwork, or the fronts of American beds, each are particularly desirable.

ERICA, *Heath* (LINN.) Nat. Ord. *Ericaceæ.* There are upwards of thirty species and varieties of heaths capable of bearing the rigours of our seasons, without assistance of any kind, and yet how few are found in gardens! seldom, indeed, are half a dozen met with together, and yet all are surpassingly beautiful; they are remarkable alike for their neat, pleasing habit, the copious display of elegant and varied flowers, and the little trouble necessary to keep them in good order, yet with all these advantages it is rare to find them cultivated to any extent, or properly valued when present; from what cause this disregard arises it is difficult to imagine, unless the same false notion which used to prevail with regard to the more tender species has been applied to these—that they are troublesome to manage. The error in the former case is really not so great as in the present instance, for none of our hardy shrubs entail less attention. If placed in suitable soil they soon attain a good hold, and when once established, may be left to nature. The particular kind of soil in which they do best, is that description of peat obtained from open commons and moors, containing a considerable amount of partially decayed vegetable matter; the black, unctuous mould of boggy land is sometimes used in the formation of American beds, but it is by no means the best, because of its impervious character. The material of such beds should always be so porous as to allow a quick passage of superabundant water completely through it, at the same time sufficiently solid to prevent the immediate action of the air upon the roots contained therein. All the plants of this family have extremely small fibrous roots, readily susceptible of injury from excess of either drought or moisture, and in order to preserve them it is necessary, when the plants are moved in autumn, to cover the bed with long litter, straw, or some such covering, to throw off excessive wet; while in the summer succeeding their removal, a liberal and often-repeated application of water will be required in dry weather; but when the earth in which they grow becomes consolidated, and the plants have recovered the check of transition, no further care will be necessary, the annual growth and production of flowers will be matter of certainty. A judicious selection of species will insure suitable plants, either for grouping in beds with the usual occupants of the American garden, among whom the contrast in character renders the heath very desirable: for planting in masses, for edging, or for filling the lower projections of rockwork, and where any number of kinds are grown, there will be a regular succession of flowers from April till far into the decline of the year.

EUONYMUS, *Spindle Tree* (LINN.) Nat. Ord. *Celastraceæ.* This genus is composed chiefly of fast-growing deciduous shrubs, with neat, pale-green foliage, and inconspicuous flowers, which are succeeded in some species by handsome red berries. They are all suitable for dense shrubberies, growing freely in any soil, and in almost all situations, but are not handsome enough for prominent stations;

all the species are increased by seed, layers, and cuttings.

FAGUS, *Beech* (LINN.) Nat. Ord. *Corylaceæ.* The common beech is one of the noblest trees we possess, as isolated specimens in park-lands, for avenues, or the composition of large masses of trees, it is second to few; it also forms an excellent hedge for protection against bleak, sweeping winds, as it bears clipping, and may be grown to a great height without danger of becoming thin. The copper and purple beech are very striking, on account of the colour of their foliage, a judicious mingling of either giving a pleasing variation among other and more common kinds. The fern-leaved beech is also handsome, and, like the others, is among the latest both to push forth its leaves in spring and to lose them in autumn. The beech prefers a loamy soil resting on chalk, and once established in a suitable soil, grows fast, whatever the situation. The timber is hard, durable, but brittle; it is in request chiefly for turnery and carriage-making. The common kind produces seed abundantly, and is thus readily increased; sowing is performed in March, and the young trees, when one, two, or three years old, transplanted either in nursery rows to remain for a few years, or they may be finally planted at the first removal; the copper and purple-leaved varieties are grafted upon the common beech in spring, the operation being performed in the usual way.

FOTHERGILLA (LINN.) Nat. Ord. *Hamamelaceæ.* Very pretty shrubs, with ovate crenated leaves, and panicles of white sweet-scented flowers, produced in early summer. They are of North American origin, and, like most of the plants from that part of the world, delight in peat soil. They are increased by layers or seeds, which require the assistance of a gentle heat to induce them to vegetate.

FRANKENIA (LINN.) Nat. Ord. *Frankeniaceæ.* The shrubby species of this genus are mostly hardy, and well deserving attention for their neat, trailing habit, and pretty, copious blossoms. They are all dwarf, and spreading in their manner of growth, and succeed in peat and loam; the most beautiful are *corymbosa,* red; *hirsuta,* light blue; *intermedia,* white; and *Nothria,* flesh-coloured; the last is quite procumbent, and well adapted for covering rockwork. They are readily increased by cuttings or seeds, both requiring a little protection till established.

FRAXINUS, *Ash Tree* (LINN.) Nat. Ord. *Oleaceæ.* A large, ornamental, and very useful genus of trees. The kinds usually planted are the common ash (*F. excelsior*) and its varieties, the latter are near a dozen in number; *pendula,* the weeping-ash, and *jaspidea,* on account of its bright yellow bark, are usual in ornamental plantations. Grown for its timber, the ash should be planted on rich land, which need not be of great depth, as the roots spread near the surface, and if in an open situation, the wood will be found to cut close-grained and tough; when intended only for poles and small stuff, the produce is much greater from such as are planted in wet land, where the trees grow faster, but the wood is not durable. On extensive farms, and other country establishments, an ash-copse should always be provided, and if cut over every five or six years, or a portion of that age, seasonally, a good supply of useful material for agricultural and rural affairs will be secured, and the wet swampy corners of outlying fields and woods cannot be better occupied. Propagation of most of the species is effected by seeds, which should be sown in March, on sandy loam, and when one year old, the plants thinned, the surplus being removed to nursery rows, and when three or four years old, should be finally transplanted; those which do not produce seed, are increased by grafting upon the common ash.

GAULTHERIA (KALM.) Nat. Ord. *Ericaceæ.* There are two North American species of this genus which bear our climate, one of them, *G. procumbens,* is an evergreen creeper, with white blossoms; the other, *G. Shallon,* is a shrub, also evergreen, and having white flowers; these are succeeded by rather large, succulent, and edible fruit; both are interesting among other American plants, and require similar treatment. Increased by layers.

GENISTA (Lamarck.) Nat. Ord. *Leguminosæ.* The hardy species of genista are low deciduous shrubs, with yellow flowers copiously produced, and desirable in the fronts of shrubberies, because of their compact growth, and the contrast afforded by their glaucous foliage among others of a deeper and brighter green. They grow in common soil, and are readily increased by seeds, cuttings, or layers. Trained with an upright stem to what is called half-standard height, several of the species form handsome specimens to plant singly.

GLEDITSCHIA (Linn.) Nat. Ord. *Leguminosæ.* This genus is composed, with one exception, of large deciduous trees, resembling the common acacia in foliage and general habit; their flowers, however, are less beautiful, being green, and the branches are armed with large thorns, which are very hard and sharp-pointed: those on *G. horrida* are near three inches long, and have lateral spines equally strong and sharp. *G. triacanthus,* the honey-locust tree, and *G. monosperma,* the swamp-locust tree, attain a height of thirty feet, and are very ornamental in plantations; *G. horrida* is of smaller growth, and may be admitted for variety into the dressed portion of the garden. All of them succeed in ordinary soil, and are rapid growers; they are usually raised from seed, but as this is seldom perfected in this country, we have to depend upon importations; grafting upon the acacia is also resorted to with success.

GORDONIA (Ellis.) Nat. Ord. *Ternstromiaceæ.* There are two species of Gordonia which, with some care, may be had to grow and flower in the open air, they are *G. Franklini* and *Lasianthus,* natives of North America, with bright green ample foliage, and elegant white flowers, resembling in form those of the almond. The plants should be stationed in a bed of peat and loam, at the foot of a south wall, and in severe weather it may be necessary to cover them with a mat, in order to protect the young shoots, on which depends the next season's flowering; and to assist an early development and maturity, the ground about them should be well drained. Increase is had by layers or cuttings. May be struck under a handglass.

GYMNOCLADUS. (Lamarck.) Nat. Ord. *Leguminosæ.* A strange-looking, scrambling shrub, with large pinnate leaves and white flowers; in summer it throws up a number of strong-growing suckers and branches, almost denuded of leaves, and hence its name, which may be translated "naked stem." These branches at first grow erect, but afterwards assume a subscandent character. It grows fast in any soil, and may be increased by division of the suckers, or cuttings of the roots.

HALESIA, *Snow-drop tree.* (Ellis.) Nat. Order. *Ebenaceæ.* The three species known to us are each handsome flowering shrubs, remarkable for the number and purity of their snow-white blossoms, produced in April and May. The flowers are borne in clusters of six or eight together, at intervals along the branches, and resemble the common snow-drop; they appear before the leaves, and last two or three weeks, and are succeeded by winged drupes of rather large size. The plants succeed in common soil, of good quality, are quite hardy, and may be increased by cuttings of the roots.

HALIMODENDRON (Fischer.) Nat. Ord. *Leguminosæ.* A small genus of very handsome flowering shrubs, derived from the salt-fields of Siberia; there are three species, two of which were formerly included in the genus Robinia, to which they are nearly allied. Their leaves are pinnate, the flowers copious, and a pleasing bright pink, produced in May and June. The plants thrive in common soil, and deserve a place in every garden. Increased by layers and grafting on the acacia.

HAMAMELIS, *Witch Hazel.* (Linn.) Nat. Order, *Hamamelaceæ.* These are spreading shrubs, which resemble the common hazel, but have bright yellow blossoms, appearing about the fall of the leaf, and sometimes continue through the winter; they are succeeded by a nut, which seldom ripens with us. They may be grown as underwood, and are increased by layers.

HEDERA, *Ivy.* (SWARTZ.) Nat. Ord. *Araliaceæ.* This well-known evergreen climber is, perhaps, the best plant we possess for covering old walls, or similar places, clothing with verdure what else would be offensive to the eye of taste; it has many opponents, and an equal number of stanch defenders; though not positively a parasite, it is decidedly injurious to living trees, and if permitted to overgrow them, will assuredly cause their death by suffocation. The notion that ivy causes damp in walls on which it grows is unfounded, and the contrary opinion may be regarded as most correct; if permitted to grow unrestrained, it certainly accumulates dust, and if birds are allowed to build their nests in it, some annoyance may hence arise, but as there are preventives to each of these objections, the judgment must be considered hasty that would altogether banish the plant. In pruning ivy some pains are required, as it does not bear the indiscriminate clipping of the shears, but should be cut back with a knife, and this pruning should take place in spring instead of autumn, as is usual, for at that time the plants are about to grow, and will speedily cover the space with new foliage; while, on the other hand, if the leaves are cut away in autumn, the unpleasant aspect of bare stems and naked bricks must be an eyesore all winter, in addition to which there is the loss to the plant of the nutriment stored by the leaves, and intended for its benefit, through the dormant season, when other sources of nourishment are closed. The ivy delights in rather light well-drained soil, often refusing to grow in that of opposite character, and does not bear removal when grown to any considerable size; on this account it is usually kept in pots at the nurseries, that it may be in a fit state to transplant at any time, and when removed the roots and ball of earth should be planted just as they are, for if loosened the death of the plant often ensues; where the soil is suitable, a plentiful stock of plants may be had by merely sticking pieces of two feet in length where they are to grow. Our English name ivy is derived from the Celtic *iw*, signifying green, or always green.

The best varieties are the Irish ivy, with large dark green leaves, and the "gold stripe," having foliage nearly as large, margined with bright yellow.

HEDYSARUM (LINN.) Nat. Ord. *Leguminosæ. H. fruticosum* is a fast-growing and free-flowering shrub, with pinnate leaves and purple blossoms, suitable for planting in shrubberies and beneath large trees; it thrives in any soil, and is readily increased by layers or seed. It is commonly, though erroneously, called French honeysuckle, a name which properly belongs to another and biennial species.

HELIANTHEMUM, *Sun Rose.* (TOURNEFORT.) Nat. Ord. *Cistaceæ.* A rather extensive and very interesting genus of dwarf ligneous plants, for the most part of procumbent habit; none of them rise above two feet, and, like their allies the cistæ, are peculiarly fitting ornaments to rockwork. They delight in open well-drained soil, and where such can be afforded are very desirable for masses in the flower garden, or in the front rank of small shrubberies. Among those which are perfectly hardy, few are more beautiful than the *H. vulgare* and its varieties, with pale or deep yellow, and single red or double flowers; *grandiflorum, croceum, roseum,* and *polifolium* are all beautiful little plants. Some others of the genus require protection in frames through the winter, of which additional care they are well deserving. Propagation is easy, either by layers or cuttings, struck under a handglass.

HIBISCUS SYRIACUS, *Althæa frutex* (WILLDENOW.) Nat. Ord. *Malvaceæ.* The varieties of this deciduous free-flowering shrub are great favorites in gardens, their large gaily-coloured and numerous blossoms being greatly admired; the plants thrive in any tolerably good soil, and attain a height of six or eight feet, when the mallow-like flowers distributed all over the plants have a fine appearance. There are six varieties, with purple, red, white, and variegated flowers; the double white and purple are very handsome, their blossoms being nearly as large as those of the hollyhock. Increase is effected by layers, grafting one upon another, or by cuttings of the young wood, struck under the protection of a handglass.

HIPPOPHÆ, *Sea Buckthorn* (LINN.) Nat. Order *Eleagneæ.* Ornamental trees of limited growth and rigid habit, with small oblong leaves and spines on the branches. *H. rhamnoides* and its varieties bear a great number of bright yellow berries, which, when ripe, have an agreeable acid flavour; from these, or from layers, the plants are increased; they succeed in any soil, and thrive in the most exposed situations.

HYDRANGEA (LINN.) Nat. Ord. *Saxifragaceæ.* These plants, though commonly cultivated in pots, and protected, are all hardy, thriving best in rich earth of a holding nature; there are seven species, five of which have white flowers. The well-known *H. hortensis* has pink flowers, though by art they are occasionally changed to blue; those of the more recent species, *H. japonica,* are lilac. When treated as hardy plants they should be stationed in good soil, and allowed to grow unrestrained, the flowers being produced in terminal heads, it follows that all pruning has the effect of reducing the number of such heads, and therefore should not be indulged in; the suckers annually produced from the base of the plant will always be sufficient to keep the bottom part clothed with foliage, and, when so treated, they become, in a few years, handsome objects, of a regular semicircular form. Propagation is easy by cuttings taken off in summer, and struck in the shade beneath a handglass.

HYPERICUM, *St. John's Wort* (LINN.) Nat. Ord. *Hyperiaceæ.* The hardy portion of this genus contains several handsome low shrubs with dark-green glossy leaves and bright yellow flowers, filled with golden thread-like stamens. They are all free-growing plants, thriving in any soil, and under the drip of trees, which renders them well suited for filling spaces in shrubberies, where their numerous brilliant flowers enliven the otherwise sombre hues which surround them. They are readily increased by layers or division of the suckers, which usually rise in abundance.

IBERIS, *Candytuft* (LINN.) Nat. Ord. *Cruciferæ.* Part of this genus is composed of pretty dwarf evergreen shrubs, having umbels of white or purple flowers very freely produced; they grow in any good garden soil, and are increased by cuttings. The best of the shrubby kinds are *corifolia, Garrexiana, pubescens, saxatilis,* and *semperflorens.*

ILEX, *Holly* (LINN.) Nat. Order *Aquifoliaceæ.* The common Holly, *I. aquifolium,* is a well-known and much admired evergreen shrub, assuming the character of a low tree in age, extensively employed in every out-door position connected with a garden; it is alike valuable in the shrubbery as a boundary hedge, or as an ornamental object standing alone. It has a wide geographical range, being found in nearly every European country, in Japan, Cochin China, and most parts of North America; it grows freely in rather dry situations, and if the soil is a deep loam well drained its progress is most rapid. As a hedge plant it is unrivalled for permanency and shelter, though more time is required to grow it than some other plants, which consequently supersede it. There are many varieties of it obtained by cultivation, and distinguished by differences in the colour, size, or margin of the leaves, among which the white and yellow striped or variegated kinds, the smooth-leaved, the yellow-berried, and the very rough, or hedgehog holly, are most conspicuous; all of these are very desirable in ornamental grounds, and being moderate growers do not often outrun their space; like the common green, they require a dry soil, or at least a position in which stagnant moisture cannot accumulate; they are increased usually by grafting on the parent species, though cuttings may be struck with care, and some of them are reproduced from seed; usually, however, seed of all the varieties returns to the normal character. There are three or four other species of holly capable of bearing our climate, not commonly grown because perhaps less ornamental; they are *laxiflora*, a deciduous tree from Carolina; *opaca*, an evergreen, with much of the habit of the common kind, from the same country; *canadensis*, a dwarf evergreen shrub from North America; and *Prinoides*, a partially deciduous under shrub, not attaining more than two feet in stature; besides which there are several requiring protection with us, such as *Dahoon*, *vomitoria*, and others, that are sometimes injured by severe frosts; many of them, however, succeed when planted at the foot of a wall, or where they may be covered in case of excessive cold; such as these are still rare plants, their hardier brethren receiving the most attention, because more certain to become ornamental. In raising hollies from seed, the best course is to gather the berries in autumn, and throwing them into heaps with about an equal measure of damp sand, after being turned a few times the pulpy coating of the seed is removed, when it may be sown in drills, or reserved till the spring; it is seldom any number vegetate till the second year after sowing, and some not till the third, and in their subsequent management the young plants should be annually removed in order to increase the number of fibres, for naturally they have but few roots, and those descending. October and April are the best months for transplanting and pruning hollies, and, as a rule, none should be finally stationed till they have been removed at least three or four times, especially if going into soil that is but shallow.

ITEA (LINN.) Nat. Order *Escalloniaceæ*. A rather interesting North American shrub, with white flowers produced on an erect spike somewhat pubescent, and willow-like leaves; it is of rapid growth in sandy soil, partaking either of loam or peat. Increased by layers.

JUNIPERUS, *Juniper* (LINN.) Nat. Ord. *Coniferæ*. The common juniper is an European tree found in all kinds of situations, from the exposed sides of bleak mountain districts to the depths of the closest forest; in valleys, and sheltered places, its appearance is that of a tree, while on the tops of mountains it is a stunted shrub. It is esteemed in Germany, Holland, and Italy for its berries, whence great quantities are imported, and used in the manufacture of gin. Besides the juniper commonly so called, the genus contains several other favorite evergreen shrubs and low trees, among which are the red cedar and savin. The first is a very handsome object, attaining a considerable height, and clothed with small, rigid, deep-green leaves, the young shoots tinged with red. The savin in our climate is generally a procumbent, or low shrub; there are several varieties of both, distinguished by some peculiarity in their manner of growing or form of their foliage; so also of the common juniper: our nurseries contain six or seven varieties, among the most beautiful of which are *pendula*, *canadensis*, *cracovia*, and *nana*. Those we prefer of *J. virginiana*, or red cedar, are, *pendula* and *variegata*, the striped foliage of which is very pleasing. Of *J. Sabina*, or savin, the most remarkable are *prostrata* and *variegata*, either of which, from their decumbent habit, have a fine effect on or near masses of stone or rockwork. Among other species of juniper commonly grown, such as *excelsa*, *recurva*, *drupacea*, *Oxycedrus*, and *chinensis* are most deserving adoption, as being distinct one from another, and handsome objects either for grouping with other coniferæ, or to stand singly. Some of the species of more recent introduction are eminently deserving notice, particularly such as *tetragona*, *Whitmanniana*, *Updeana*, *Bedfordiana*, and *religiosa*; these are all handsome, and either in the pinetum, or judiciously dispersed on extensive lawns, are very effective. As regards planting this tribe, the remarks applied to the genus *cedrus* may be repeated; they should not be stationed very near habitations, or among flowers; their own stateliness is then lost and an effect imparted quite foreign to what should surround such places. Junipers prefer light well-drained soil, and do not require any great depth, growing as well or better on a strata lying on gravel or rock as upon the richest loam. They are raised from seed, some of the kinds requiring heat to start them, and some nursing while young, and some may be propagated by cuttings.

KALMIA. (LINN.) Nat. Order *Ericaceæ.* All the species of this genus are most beautiful evergreen shrubs, ranking among the best we possess; *K. latifolia* is well known among American plants, where its lovely, deep, rose-coloured, waxy flowers render it conspicuous; *K. augustifolia,* though smaller, is not less lovely. There are several varieties of this species, the best of which are *variegata,* with striped leaves, *nana, rosea,* and *rubra,* whose flowers vary in intensity, as the names imply. *K. glauca* and its variety, *rosmarinifolia,* are extremely pretty, little under shrubs, not rising above two feet, and in spring completely covered with their beautiful blossoms. All of them delight in sandy peat, and require the management of hardy plants of the class. They are raised from layers and seed; the latter requires to be sown on heat, and the young plants should be nursed in frames through the first year or two of their existence.

KERRIA *Japonica,* (DECANDOLLE.) Nat. Ord. *Rosaceæ.* An old and favorite plant, better known as *Corchorus japonica,* esteemed for covering arbours and walls, where its bright yellow or orange-coloured flowers have a lively appearance. It may also be grown as a shrub, and is equally effective in that way; it succeeds in any common soil and in almost all situations, growing fast, and offering ready means of increase by offsets, which rise in considerable numbers from the roots of established plants.

KOLREUTERIA *Paniculata* (LINN.) Nat. Ord. *Sapindaceæ.* When planted at the foot of a south wall, this plant forms a handsome, spreading, tall shrub, with singular toothed pinnate leaves, and numerous panicles of white flowers; it will not bear a full exposure, as the young shoots are liable to injury from frost; common soil suits it, and propagation is effected by layers or root-cuttings. The only species is a native of China.

LAGONYCHIUM (BIEBERSTEIN.) Nat. Ord. *Leguminosæ.* The only species, *L. Stephanianum,* like the preceding, requires some protection from severe frost, a similar situation, and the covering of a mat in winter, is, however, sufficient to keep it in health, and cause the production of its handsome spikes of yellow flowers. In habit, it is a low tree, resembling an acacia, succeeding in common soil, and increased by seeds, layers, or cuttings struck under a frame.

LARIX, *Larch* (DECANDOLLE.) Nat. Ord. *Coniferæ.* The larch, though possessing less variety than most other common genera of coniferæ, is yet among the most ornamental, and, as a timber tree, fully equal to the best; the number of species has been reduced to two or three, and they can scarce be called definite; there are, however, several varieties, especially of *L. Europea,* the common larch, among which those called *pendula, horizontalis, Kellermanniana,* and *flore rubro,* are most remarkable. *Larix Americana* is itself a very handsome tree, and the variety referred to it, called *pendula,* is particularly noticeable. They are deciduous, and regarded as ornamental objects, are well suited for large plantations, where, in spring, the tender green of the growing leaves and shoots, and bright, deep, rose-coloured tints of the flowers, are most pleasing. They thrive in the poorest soil, and may be planted more thickly than most other trees, a circumstance worth considering, where shelter or a blind is required quickly. Grown for timber, the larch must be stationed in the most exposed places, and on the poorest and driest soil; on better land their early progress is more rapid, but the wood in a few years becomes unsound. In favorable places, the return of measurable timber is found to exceed that of the pine, in nearly double the quantity, and trees of a useful size, of superior quality, may be grown in a little more than a third the time, larch timber of better grain being cut from trees 30 years old, than from the pine at 100. In the application of larch-wood, an objection has arisen from its warping, but this, it is stated by Monteath and others may be prevented by barking the trees in the spring, previous to their being cut down in autumn. The larch is not adapted for a nurse plant, though sometimes so employed; it is deciduous, and therefore affords the young trees little or no shelter at the time it is most required, but it may be profitably grown for poles, as it will bear to stand thick, and grows very rapidly, and always erect; in ten or fifteen years they attain a useful size, and if the bark is removed are very serviceable for rough building or other purposes; a great quantity are used for rustic work, when they are generally worked with the bark on them, in this state, however, they do not last beyond a few years, it is therefore better removed, and the poles may be painted or varnished. The larch is usually raised from seed, and like the Abies requires a good deal of practical judgment to ensure their vegetation; the rearing these and most other members of the tribe is almost confined to the Scotch nurseries, where great attention is paid to the matter, and supplies are thence received at so little expense that it is seldom attempted in England, from pecuniary reasons. The practice is to sow in April on well prepared ground of a sandy nature; the seed is sown moderately thick and rolled in, after which about an inch of earth is thrown over; and when the plants are one or two years old they are transplanted to nursery rows about a foot apart each way, and every alternate year they should again be removed till finally stationed. Autumn is the best time for planting, as these trees begin to grow so early in spring, that it can seldom be done at that time without injury; the plants should not exceed five or six years old, and if younger their ultimate success is more certain.

LAURUS, *Bay Tree* (PLINY.) Nat. Ord. *Lauraceæ.* Of the common bay tree (*L. nobilis*) there are several varieties, all esteemed equally with the parent species among hardy evergreen shrubs, and but for the circumstance of their requiring protection in severe weather, would doubtless become more generally employed; the broad-leaved variety, *latifolia*, is certainly one of the best, its ample dark-green, glossy foliage having a fine effect wherever, from the sheltered character of the place, it can be preserved to attain a good size; *crispa, undulata,* and *variegata* are also fine shrubs, and where a light loamy soil and protection from excessive frost can be afforded, are very desirable. This plant is the laurel of the Roman poets, and the distinction bestowed by them upon it induced Linnæus to call the species *nobilis.* In the south of Europe it assumes the character of a tree, attaining a great height, and its ever-verdant appearance is strikingly symbolical of that endurance with which it may be supposed they desired to invest the fame of their heroes. The plant now known as the laurel belongs to another and very different genus. Besides the bay tree, the genus Laurus contains some other shrubs capable of bearing our climate, the most remarkable of which are *L. Benzoin*, or Benjamin tree, and *L. sassafras*, both used in medicine; the first is a partly deciduous shrub, and the latter is a rather large tree; *L. Carolinensis* and its varieties are also trees, while *L. æstivalis, albida, Catesbiana, Diospyrus, geniculata,* and *thyrsiflora* are shrubs. They all delight in sandy loam, and in the warmer counties of England thrive tolerably well. All the species are aromatic and more or less stomachic. They are increased by layers or cuttings of the roots. The common bay is much used in cookery to flavour custards, &c., but as the nut-like taste of the leaves depends on the presence of prussic acid, it is, consequently, poisonous, and should be employed cautiously.

LAVENDULA, *Lavender* (LINN.) Nat. Ord. *Labiatæ.* The hardy species of lavender are much esteemed for their fragrance, which continues about the flowers and leaves for a considerable period after they are cut from the plant. Lavender succeeds best in dry gravelly soil, and, it is said, has a stronger perfume from such places. It is readily increased by cuttings, struck in autumn on a shaded border, and as the plants become unsightly and bloom with less vigour in age, they should be renewed every five or six years.

LEDUM, *Labrador Pea* (LINN.) Nat. Ord. *Rhodoraceæ.* Very handsome dwarf shrubs, of the American class. *L. palustre* attains a height of about two feet, and *latifolium* somewhat more, the others are quite dwarf. All have handsome white flowers, which are produced in May. They delight in sandy peat, and are suitable for the fronts of masses of rhododendrons and similar shrubs. Propagation is effected by seeds sown in heat, and by layers of the young wood.

LEYCESTERIA (WALLICH.) Nat. Ord. *Caprifoliaceæ. L. formosa* is a most beautiful evergreen shrub, a native of Nepal. In our shrubberies the deep green hue of the foliage and bright purple colour of the large bracts and berries render it very conspicuous; it grows best in sandy peat and loam, though it does not refuse any common soil that is free of stagnant moisture. The flowers themselves are white, produced in August, but, as before hinted, it is the bracteas which are most beautiful. Increased by layers or seed. The best position for it is the foot of a south wall, as in exposed places there is danger of its being injured by frost.

LIGUSTRUM, *Privet* (LINN.) Nat. Ord. *Oleaceæ.* The common privet, *L. vulgare,* is a well-known shrubbery plant, valued for its docility, growing freely in any soil and in almost all situations; it thrives alike beneath the drip of trees or open places, in wet land or dry, and for garden hedges it is frequently employed, as it bears pruning in any manner, as well or better than anything else we have; in spring its white blossoms are deliciously fragrant, and in winter it is ornamented with clusters of dark purple berries. There are several varieties, the best of which are the evergreen *sempervirens,* the yellow-berried *anthocarpum,* and *variegata.* *L. lucidum,* or Chinese privet, is rather more tender; it also is a beautiful shrub, with larger and glossy foliage. Increased by seed, layers, or cuttings.

LIQUIDAMBER (LINN.) Nat. Ord. *Balsamaceæ.* The two species of this genus are rather handsome trees, differing considerably in stature. *L. styraciflua,* the sweet-gum tree, is the finest; in its native country, the southern states of America, frequently attaining sixty or eighty feet in height; with us it closely resembles the lesser maple. From between the wood and the bark issues a fragrant gum, which, when dried, is esteemed as a dentifrice; the wood is hard, and handsomely variegated, and is used for making furniture. *L. imberbe* is smaller, partaking more of the character of a shrub; they grow well in strong loamy soil, and are increased by cuttings or seed.

LIRIODENDRON, *Tulip tree* (JUSSIEU.) Nat. Order, *Magnoliaceæ.* This handsome, hardy tree is well suited for planting singly on large lawns, in avenues, or in groups on park land; its large size, smooth, clean-looking stem and branches, ample fiddle-shaped leaves, and pretty flowers, render it very striking wherever fairly seen. In England it does not flower till grown to a considerable size, requiring many years to attain the maturity which seems necessary; ringing has been recommended to induce an early habit of blooming, but whether it has succeeded we cannot say. The flowers are composed of six petals, arranged like those of the tulip; they are marked with green, yellow, and red spots, and being produced at the ends of the branches are very ornamental when abundantly produced. The tree succeeds in deep rich loam, and should be encouraged to form a spreading head; it is usually imported in a young state from the south of Europe, or raised from seeds procured from the same country, as our climate does not ripen them. There is a variety of the common tulip tree distinguished only by its obtuse-lobed leaves.

LONICERA (LINN.) Nat. Order, *Caprifoliaceæ.* This genus is closely allied to *Caprifolium* (Honeysuckle), differing mainly in having a more shrubby character. *L. xylosteum,* the fly honeysuckle, is well known, and may be regarded as the type of the genus. All the species are rapid-growing and free-flowering deciduous shrubs, which thrive in any light soil, and are readily increased by cuttings, planted in a shaded border early in autumn. The prevailing colour of their flowers is yellow, varied, in several species, with more or less of orange and red.

LYCIUM, *Box-thorn* (Linn.) Nat. Ord. *Solanaceæ.* The hardy species of box-thorn are rather pretty, and merit cultivation in certain situations; two of them are rapid climbers, deciduous, and free to flower. *L. barbarum* is commonly employed to cover arbours, and the other, *L. turbinatum,* is equally deserving adoption, their numerous pink and purple flowers rendering them pleasing through the whole summer. *L. ruthenicum, europæum, chinense,* and *Trevianum* are deciduous trailing plants, suitable for covering banks, rockwork, and similar places. All thrive in common soil, and are readily increased by cuttings of ripened wood, placed in a shaded border.

LYONIA (Nuttall.) Nat. Order, *Ericaceæ.* A small genus of handsome American evergreen shrubs, with white flowers; there are six species, four of which were formerly included in *Andromeda.* The most beautiful are *ferruginea, multiflora,* and *capreæfolia.* They should be planted in peat, and receive the treatment usual with American plants. They may be increased by layers, or seed sown in a gentle heat, and afterwards gradually inured to the open air.

MACLURA, *Osage Orange* (Nuttall.) Nat. Ord. *Urticaceæ.* Only one species, *M. aurantiaca,* will bear exposure to our climate, and that requires protection from the severest weather. It is a handsome, tall growing tree, with spiny branches and ovate acute leaves; the flowers are apetalous, and are followed by a yellow fruit the size of an orange, which has an agreeable flavour when fully ripe. The tree should be planted in light rich soil against a south wall, and have the branches trained in the manner of a fig. Cuttings strike in a gentle heat, but the operation is tardy. It is a native of the southernmost parts of North America.

MAGNOLIA (Linn.) Nat. Order, *Magnoliaceæ.* A large genus of magnificent shrubs, noble alike in foliage and flowers, and deliciously fragrant. *M. grandiflora* has evergreen leaves, nine or ten inches long, and blossoms six inches or more across, pure white, thick in substance, lasting in beauty a long time, and very sweet. The Exmouth variety is even preferable, because it flowers earlier and more abundantly, and the tree is hardier. *M. conspicua, glauca,* and *gracilis* are also highly esteemed, they are deciduous; the first two have white flowers, nearly as large as those of *grandiflora,* and more fragrant, the last has purple flowers. There are several varieties both of *conspicua* and *glauca;* among those of the first, *Soulangeana* is to be preferred, and of *glauca* we would select *Burchelliana* and *Thomsoniana. Kobus,* for its pure white flowers and neat habit, and *tripetala,* for its singular, large foliage, resembling, by their position at the ends of the branches, an umbrella, are well worth a place in every ornamental garden. All the kinds do best in a mixture of peat and loam, and in exposed situations need protection in winter; in the southern parts of the kingdom, however, all of them succeed as lawn plants, *grandiflora* being frequently employed in this way, or to cover walls, for which purpose it is unrivalled. Propagation is usually effected by layers; these may be formed of branches two or three years old, which should be laid into pots, as they require some little attention immediately after their removal from the parent plant; when taken off, they should be shaded in a cold pit, but not a leaf must be cut away, however much they may flag, as this is often the cause of their death. Seeds are annually imported from North America, and should be sown as soon as received, in pots of light earth, such as peat and loam, and if plunged into a very gentle hotbed, will vegetate quicker and more certainly. The young plants must be nursed in pots for two or three seasons, and may then be planted out.

MALACHODENDRON (Linn.) Nat. Ord. *Sterculiaceæ.* The only species, *M. ovatum*, is a very handsome North American plant, with large cream-coloured blossoms. It is sufficiently hardy to exist through our winters without protection, but as the young shoots are often injured by spring frosts (and also to assist the ripening of the wood in autumn), it is best to plant it against a conservatory wall, where in light soil, such as a mixture of peat and loam, it thrives very well, and if occasionally covered in the bad weather of spring, it will flower abundantly. Propagated by cuttings of ripened wood, struck in sand upon a gentle heat.

MENZIESIA (SMITH.) Nat. Order, *Ericaceæ.* Very small, heath-like plants, growing about half a foot high, and requiring the treatment of hardy heaths. *M. polifolia* attains to near two feet, and is by far the finest of the genus; it has purple flowers; all are suitable for rock-work, or the front of American beds. Increased by layers or seed.

MESPILUS, *Medlar* (LINDLEY.) Nat. Ord. *Rosaceæ.* This genus, as at present defined, contains only two species, *M. germanica* and *lobata;* of the first there are three varieties, the best of which are *diffusa* and *stricta.* *M. lobata* is perhaps better known by its synonymes, *grandiflora* or *Smithii.* *M. germanicus* is the common medlar, the fruit of which is eaten when in a state of incipient decay, and when not cultivated in the orchard, may be planted in shrubberies, for the sake of its early blossoms; all of them are low-growing trees, mostly having a spreading head, and produce large white flowers at an early season, followed by the fruit before mentioned. They do best in rather moist loam, and are increased by grafting upon seedling stocks, or on the common hawthorn. The variety called *stricta* is nearly evergreen, all the others are deciduous.

MORUS, *Mulberry* (LINN.) Nat. Ord. *Urticaceæ.* There are nine species of *Morus*, seven of which are hardy in our climate. *M. nigra*, the common mulberry, has been described in the Dictionary of Fruits; the remainder of the genus, though fruit-bearing trees, are more generally grown for ornamental purposes. The berries of *M. alba* are of a pale colour, and less acid than those of the common mulberry; it is extensively cultivated in the south of Europe for its leaves, on which silkworms are fed. In Italy and China they have several varieties of this species, valued according to the size of the foliage. The culture of these trees is carried on in the best silk-growing countries much in the manner that we treat osiers; they are planted in damp places, and the young shoots cut off when in full leaf. *M. rubra* and *scabra*, both North American species, *M. calcar-galli* from New South Wales, and *tartarica*, bear our climate, and are worth a place in large shrubberies. Propagation of the species is usually carried on by layers, though they may be obtained from seed, and of course can be grafted one upon another.

MYRICA, *Candleberry Myrtle* (LINN.) Nat. Ord. *Myricaceæ.* In this genus we have four hardy shrubs, two of them evergreen and the others deciduous. *M. Gale*, the sweet gale, is a native of Britain, and formerly was used in the place of hops in making beer; an inferior wax is obtained from the catkins boiled in water; the branches and leaves are used in Scotland to dye wool yellow, and a decoction of its juices is said to expel fleas. The name Candleberry Myrtle was given by the Americans to the species *cerifera*, as in the northern states they make a wax from the berries, which in some districts may be gathered so plentifully as to furnish the inhabitants with candles; when refined, this wax is of a transparent green colour, is firm, burns well, and when extinguished emits a pleasant fragrance. An excellent and agreeable-scented soap is also made from the wax. Both the foregoing are deciduous, the other hardy species are *carolinensis* and *pennsylvanica*, which are evergreen. All are neat-growing plants, preferring a moist situation, and are excellent sea-shore plants. They are increased by seeds or layers.

MYRICARIA (DESVAUX.) Nat. Ord. *Tamaricaceæ.* Containing two species, formerly included in *Tamarix;* they are evergreen, neat in habit, and suitable for the back of moderate-sized shrubberies; their flowers are pink. Increased by layers.

NEGUNDO, *Box-Elder* (Mœuch.) Nat. Order, *Aceraceæ.* Of the single species known in this country (*fraxinifolium*) there are two varieties, which, with their parent, are closely allied to the maple, but distinguished by their pinnate leaves. They are handsome trees, of medium size, deciduous, and suitable ornaments of large shrubberies, or for filling the fronts of detached groups. They succeed best in light soil, and are easily increased by cuttings or seed. Syn. *Acer negundo, Negundium americanum.*

NEMOPANTHES (Rafinesque.) Nat. Ord. *Aquifoliaceæ.* *N. canadensis,* the only species, is an ornamental deciduous shrub, formerly included in the genus *Ilex.* It is a native of North America, and requires to be grown in peat. Increased by seed or layers.

NITRARIA (Schreber.) Nat. Ord. *Nitraceæ.* Curious little thorny shrubs. The original species, *N. Schoberi,* is a native of the salt plains of Siberia, it has purplish-blue flowers; the variety *caspica* from the Caspian desert, and has white blossoms; both these require a liberal mixture of salt with the earth they are grown in, or they do not flower well. *N. tridentata,* from Barbary, succeeds without this addition. They are all more curious than beautiful, and may be increased by cuttings or layers.

NYSSA, *Tupelo* (Linn.) Nat. Ord. *Santalaceæ.* North American, dwarf, deciduous trees, with spreading heads, varying in height from ten to twenty feet. In its native country, *N. denticulata* rises to the height of eighty or a hundred feet, and is described as of great singularity and beauty. It produces a fruit which resembles small olives, and they are preserved and eaten by the Mississipians in the same manner. With us, the whole of the genus are shrubbery plants, thriving best in damp situations, and are propagated chiefly by layers.

OLEA, *Olive* (Linn.) Nat. Order, *Oleaceæ.* The European olive, *O. sativa,* is an important plant, on account of its fruit, and the oil extracted from it. The original species may be grown in the southern parts of the kingdom, by stationing it in a sheltered place, or trained against a wall; it is, however, only to be regarded as an ornamental object, for it is seldom the fruit attains any degree of perfection in the open air; the fragrance of the flowers is another inducement to its culture, and in favorable seasons these are abundantly produced. The olive delights in light rich earth, such as a mixture of peat, loam, and manure, and cuttings may be struck early in autumn, under a hand-glass upon a warm border, or it may be grafted upon the common privet.

ONONIS, *Rest Harrow* (Linn.) Nat. Ord. *Leguminosæ.* Two species of rest harrow may be included in our list of hardy shrubs. They are *rotundifolia,* rising about a foot high, and *fruticosa,* attaining nearly double the stature; both are deciduous, and have pleasing pink flowers. They are rigid-growing plants, armed with spines, and succeed best in peat soil. They are appropriate occupants of rockwork, and sloping banks in a sunny position. Propagation is effected by layers or seeds. There are a few other species, which are hardy and of suffruticose habit, but devoid of interest sufficient to repay their culture.

PALIURUS, *Christ's-thorn* (Gartner.) Nat. Order, *Rhamnaceæ.* *P. australis* is a native of the south of Europe. It is a handsome free-flowering shrub, with purplish-green blossoms, flexible stem, and very prickly; the fruit is very singular, being roundish, and buckler-shaped, having a projecting border, which gives it the appearance of a head with a broad-brimmed hat on. It is by some supposed, and they are borne out by the testimony of many credible travellers, that the crown of thorns put upon the head of Christ was formed of this plant; it is one of the commonest plants of Judea, and the ease with which it may be bent lends great probability to the supposition. With us it grows freely in common soil, and may be increased by layers or seed.

PAVIA (Boerhaave.) Nat. Order, *Æsculaceæ.* The greater part of this genus is a separation from that of *Æsculus.* The species are handsome free-flowering trees or shrubs, with more or less of the character of the horse-chesnut, on which they are commonly grafted to obtain an increase. Seeds are sometimes produced, which should be sown in March; and the smaller kinds may be propagated by laying.

PHALEROCARPUS (G. DON.) Nat. Order *Ericaceæ.* A pretty little trailing plant, with white flowers, succeeded by white berries; it should be planted in peat, and thrives best in a damp situation. Increased by layers and, occasionally, by seed.

PHILADELPHUS, *Syringa* (LINN.) Nat. Order, *Philadelphaceæ.* A rather extensive and very desirable genus of deciduous shrubs, which grow freely in common soil, and in almost any position, displaying their richly-scented white blossoms in May and June, the perfume of which resembles that of orange blossoms, but is stronger. *P. coronarius* is common in all shrubberies; some of its varieties are well deserving attention, especially the double flowering kind, and also that with variegated leaves, *Gordonianus, grandiflorus, speciosus,* and *Zegheri* are all beautiful species, and have the advantage of incurring no trouble in their management. They are all readily increased by division of the suckers, which in most spring up abundantly, and where they are absent the branches may be laid, and strike root freely.

PHILLYREA (LINN.) Nat. Order, *Oleaceæ.* Useful evergreens, with small, deep green leaves and neat habit of growth; they are indispensable in forming masses of shrubs, as they continue in order longer than most other plants of the same kind. Light loamy soil suits them best, but they are not very particular in this respect, nor do they refuse to grow where planted ever so thickly, so that they are not subject to the drip of large trees. The best mode of propagating them is to lay them, though cuttings strike freely, but are a long time forming plants.

PHOTINIA (LINDLEY.) Nat. Order, *Rosaceæ.* The members of this genus are very handsome evergreen shrubs, with bright green shining foliage, and beautiful white blossoms. In the warmer counties of the kingdom they stand without protection wherever the ground is well drained and the situation airy; in damp cold places they should be planted against a wall, and covered in winter with mats. *P. serrulata* is the hardiest, nor are the others more tender than magnolias and such plants. They succeed best in peat soil, or peat and loam, if there is danger of their suffering from drought in summer. Propagation is managed by striking ripened cuttings in sand, under a glass, or by grafting or inarching upon any species of *pyrus* or *cratægus.*

PICEA (D. DON.) Nat. Order, *Coniferæ.* This is a section of the genus *Pinus*, containing the following species: *amabilis, balsamea, Fraseri, grandis, nobilis, pectinata,* the type of the section, previously called *Pinus picea, Pichta, Pindrow, Pinsapo,* and *Webbiana.* They are generally distinguished from Pinus by a more vigorous habit and a greater abundance of resin. In a cultural sense they may be referred to that genus, and indeed their separation, in a botanical view, is objected to by some systematists.

PINUS, *Pine* (LINN.) Nat. Order, *Coniferæ.* This is at the same time one of the most important and ornamental genera of the order to which it belongs; the members of it are noble evergreen trees, bold and picturesque in outline, so hardy as to prefer the most exposed situations, and most valuable as timber trees; the majority are natives of the colder regions of Europe and North America, inhabiting, in general, the mountainous districts; the Alps of the former and the Rocky Mountains of the latter being clothed with these and other trees of the same family. *Pinus sylvestris,* the Scotch pine, or, as it is more commonly, though erroneously, called, the Scotch fir, is one of the most useful timber trees we possess, or that is known; immense quantities are imported from Russia, Sweden, and Norway, under the name of red or yellow deals. There are several varieties, differing considerably both in appearance and quality; that which produces the most durable timber is called *P. sylvestris montana,* and is readily distinguished by the horizontal direction of the branches, and their inclination downwards, close to the trunk; the leaves are more glaucous, of a lighter green, shorter and broader than those of the species, or more common varieties; the bark also is smoother, and the cones thicker and blunt; it is more hardy, and grows much faster, arriving at a useful size several years before any other of the genus; it is also an excellent nurse for plantations of other trees, and even for poles it will be found second only to the larch. Among the more strictly ornamental portion of the genus. *P. palustris* is remarkable for its singular foliage, hanging in tufts of near a foot in length. Equally conspicuous, in a similar way, is the *P. longifolia*, a very handsome and picturesque tree, but unfortunately too tender to bear our climate, except in very sheltered spots. *P. cembra* and *P. Strobus*, the Siberian and Weymouth pines, are both esteemed for ornament and use, the latter is especially esteemed for masts; in America it grows to an enormous size. Next to this in value, for similar purposes, is the pitch pine (*P. resinosa*), which attains a great height, and grows very straight; *Pinus inops*, the Jersey pine, and its varieties; *P. Banksiana*, the scrub pine; and *P. Pumilio*, with its varieties, are all of dwarf spreading habit; some of them, when growing on poor soil in exposed places, assume quite a decumbent habit, though the removal to a richer land induces a stronger and erect growth, so as to completely alter their character. *P. pinea*, the stone pine, produces a very large cone, and in Italy, where the tree is most abundant, the seeds are very generally eaten; they are sweet, with a slight taste of turpentine. *P. Tæda* is by some considered the most valuable species; it has larger cones than even the last, with long leaves, a robust habit, and very resinous sound wood. The remainder of the genus are all desirable, at least as ornamental objects, and in England, except in a few elevated spots, little more can be expected of any of the tribe; our soil is too rich and climate too moist to grow good timber from coniferous trees, all of which require mountain air and poor soil to form sound durable wood. For raising and general culture of the genus we may refer to ABIES.

PIPTANTHUS (SWEET.) Nat. Ord. *Leguminosæ.* The only species (*P. nepalensis*) is a very handsome shrub, and, notwithstanding the fugacious character of its flowers, deserves more extensive cultivation. It is deciduous, and hardy enough to bear our climate in all but the exposed situations; the showy yellow blossoms, which last only one day, are produced in succession through May. Increased by seeds, cuttings, or layers.

PISTACHIA (LINN.) Nat. Order, *Terebinthaceæ.* From *P. vera* the pistachia nuts of Sicily are obtained, and *P. terebinthus* furnishes the Cyprus turpentine. Both these trees succeed with us, when planted against a south wall, and trained somewhat in the manner of peaches. The plants are diœcious, and consequently both male and female specimens must be grown to produce fruit. The flowers are borne in loose bunches, proceeding from the sides of the previous year's branches, and to ensure the setting of the fruit the male flowers should be cut and stuck into a pot of moist mould suspended over the female plant; or the former may be budded upon the female, and thus the two kinds grown together. There are two varieties of *vera;* none of the genus, however, can be regarded as ornamental objects, and if grown at all, it must be either for their fruit or botanical interest. *P. terebinthus*, and its variety, *sphærocarpa*, are rather more hardy, and may be planted as standards in sheltered places. Increased by layers or cuttings struck under a hand-glass.

PLANERA (MICHAUX.) Nat. Order, *Ulmaceæ.* A small genus, containing two species very closely allied to the elm, from which perhaps it is not generically distinct. They are deciduous bushes, or low trees, growing in common soil, and suitable only for the arboretum. Increased by layers, or grafting upon the common elm.

PLANTANUS, *Plane tree* (LINN.) Nat. Ord. *Amentaceæ.* These are noble timber trees, with erect trunks, spreading heads, and large bright green leaves; particularly effective either as single specimens upon large lawns or park lands or for planting avenues. The chena, or eastern plane, *P. orientalis,* is much esteemed in Persia, where groves of it are planted near the habitations; it was the first of the genus introduced to England; some of the original trees now standing in perfect health at Lee, in Kent, are, according to the records, exactly three hundred years old. The American plane, *P. occidentalis,* is one of the largest trees of that country; it is equally noble with the preceding species, as also is the maple-leaved *P. acerifolia.* *P. cuneata* is a dwarf tree, seldom attaining above ten feet in height, very effective in shrubberies, where its handsome wavy foliage is very pleasing. The wood is white, smooth-grained, and soft, when first cut, but hardens as it dries; it is esteemed by the turner and cabinet-maker. The trees delight in a deep rich loam, where they grow rapidly for the first twenty years, after which their progress is less remarkable. They are readily increased by layers; or cuttings, taken in autumn and planted in a sheltered border, will root sparingly.

POPULUS, *Poplar* (Linn.) Nat. Order, *Salicaceæ.* What the cypress is among evergreens the poplar is to deciduous trees; the conical form of the greater part of the genus may, by judicious employment, be made highly pleasing in varying the outline of other round-headed trees, and, although not a long-lived tree, it is useful for immediate effect, as its growth is most rapid. The black Italian, the Lombardy, and the common black poplars are among the best of the conical-growing kinds. The abele, gray poplar, and aspen are more branching, forming rounder heads; they are all desirable to form blinds or fill spaces in plantations, which they will more quickly than any other tree we possess, and are very effective among masses of dark foliage, on account of the white down which covers the under side of their leaves, and is seen in a rapidly-changing light when agitated by the wind. *P. balsamifera* belongs to the erect growing section, though not so large as some others; the buds of this tree throughout the winter are coated with a glutinous yellow substance, which often collects in drops, and, in Canada, is made an article of commerce. Grouse feeding upon this balsam acquire a taste much esteemed by epicures. The timber of the whole genus is white, soft, light, and stringy, not subject to swell or shrink, and does not split so readily as most heavier woods. These qualities suit it for the purposes of the trunk-maker; clogs, butchers' trays, and other similar things, requiring a light tough wood, are also made of it; it is, besides, recommended for floor-boards, but for this purpose we should think it too soft, and therefore not likely to wear well; it has an advantage, however, in being much slower to take fire than resinous woods. Poplars delight in moist alluvial soils, and by the sides of streams grow amazingly fast; most of them may be propagated by cuttings taken in autumn, and bedded thickly into a sheltered border, and those which will not strike in this way may be layed.

PRINOS, *Winter-berry* (Linn.) Nat. Ord. *Aquifoliaceæ.* Dwarf-growing shrubs, the greater part deciduous, with serrated foliage resembling that of the evergreen oak, rising four or five feet high; one species (*P. glaber*) is evergreen, and does not grow beyond two feet high; they are only desirable on account of their berries, which are pleasing in winter, and in this respect the scarlet-berried *P. lanceolatus* is the best. They grow in any light soil, but thrive best in peat; may be increased by layers or seed.

PRUNUS (Linn.) Nat. Order, *Rosaceæ.* In the genus we have, besides the kinds usually grown as orchard trees, several belonging to the ornamental division, among which are some indispensable to every garden, as instanced in the common and Portugal laurels, the bird and Virginian cherries, and others. Some confusion has been caused by the separation of this and other allied genera, which seem to require further arrangement. Without entering upon that question, however, we prefer to follow the original constitution of the genus, and, consequently, include some species that have on recent occasions been considered as removable. Among the deciduous trees of the genus which may be called ornamental there are the bird-cherry, *P. Padus,* and its variety, *rubra,* the Cornish bird-cherry; *P. Virginiana,* the Virginian cherry; *P. Serotina,* American bird-cherry; *Caroliniana,* evergreen bird-cherry; *mahaleb,* the perfumed cherry; *avium,* coronne cherry; *chicasa,* or chicasaw plum; and *Pennsylvanica,* all desirable on account of their abundant display of white blossoms in early spring, and, in most instances, for their handsome fruit at a later season. In those which have a shrubby habit there are the useful laurel, *P. laurocerasus,* and Portugal laurel *P. Lusitanica,* both well known, and present in all gardens; *P. depressa,* the sand cherry; *hyemalis,* dwarf choke-cherry; *pygmæ,* very dwarf; and *P. maritima,* the sea cherry, besides others of less interest. All the species grow in ordinary garden soil, and are quite hardy. The common laurel was introduced from Holland in 1629; it is a native of the Levant; the first plant was grown in the garden of a merchant, Mr. James Cole, of Highgate, who, according to Parkinson, used to cover it in winter with a blanket. The Portugal laurel appears to be a native of Madeira; it was brought to this country from Portugal in 1648. The arborescent species are usually increased by grafting on the wild cherry, or raised from seed; the dwarf kinds are readily propagated by layers or seed when produced.

PUNICA, *Pomegranate.* Nat. Ord. *Myrtaceæ. P. granatum,* the true pomegranate, is a native of the south of Europe, extensively cultivated at Genoa and Leghorn for its fruit; with us it succeeds when trained against a south wall. There are two species, but the other is more tender and altogether inferior to the present. It should be planted on a border of light rich loam, and in pruning it must be observed, that as the flowers come out singly, or several together, at the ends of the branches, only the weakest shoots are to be removed, never shortening those which remain, except to get additional wood. A good practice is to train the shoots erect from an horizontal base, as in the manner of grape vines, and to cut every alternate branch each year, so as to leave half the number to flower, and by the removal of the others to provide for a future supply of new wood where it is most wanted. The flowers of *P. granatum* are scarlet, and there are several varieties having double and single rose-coloured or yellow blossoms, and also others with double flowers of the colour of those of the species; the flowers are produced in succession throughout the summer, and upon the single varieties are followed by the fruit, which, with the assistance of a glass case may be ripened to a flavour very nearly or quite equal to those imported. Independent of this, however, the plants are worth every attention merely as ornamental objects. They are increased by layers, or cuttings may be struck in sandy soil, beneath a hand-glass upon a warm border; the scarcer kinds are also grafted upon the common sorts, in the manner of apples.

PURSHIA (Decandolle). Nat. Order, *Rosaceæ.* One species only, *tridentata,* is yet known to us. This is a rather pretty dwarf shrub, with yellow flowers displayed in May and June; it should be grown in very light peaty soil, and sunny situation, where it flowers and seeds abundantly, offering a ready means of increase.

PYRUS (Linn.) Nat. Ord. *Rosaceæ.* In this genus we have a few ornamental species, both shrubs and trees. Among the latter, the most popular are the common mountain ash (*P. aucuparia*) and the purple-berried mountain ash (*P. Americana*); these are excellent subjects for suburban districts, as they bear the smoke and confined air very well; they are gay in spring, with their large bunches of white strongly-scented flowers, and in autumn with the still larger clusters of bright-red or purple berries. Besides these, there are the white and Swedish beam tree, *P. aria* and *P. intermedia,* with the several varieties of each, all of them handsome timber-trees, of considerable size. *P. hybrida,* and *pinnatifida,* the bastard service tree, are also worthy a place in the shrubbery or plantation, if only for their large white flowers in spring. *P. coronaria*, the sweet-scented crab, is equally deserving attention, and among the shrubby kinds, may be mentioned the *P. arbutifolia* and its varieties, *nivalis*, remarkable for its silvery leaves, and *melanocarpa*, with singular black fruit. All the kinds do best in rich loam, deep and porous; they may be increased by layers or seeds, the more difficult and scarce being grafted upon apple stocks, or upon the mountain-ash.

QUERCUS, *Oak* (Linn.) Nat. Ord. *Cupuliferæ*. The family of oaks are inhabitants of the temperate zones in both hemispheres, and rank among the most noble, as well as useful, forms of the vegetation of those regions. In the fauna of our own country, the oak has ever held a prominent position, and either as an ornamental object, or in the more utile character of a timber tree, is universally regarded as pre-eminent.

Both the scientific and popular names of the genus have been by turns the subjects of controversy among the learned; the generally received derivations are, of *Quercus*, from the Celtic *quer*, fine, and *cuez* a tree, expressive of the veneration in which the tree was formerly held, associated as it was with the religious ceremonies of the primitive Britons, and bearing, as is asserted, the holy mistletoe; another derivation, of very opposite connexions, is sought by some in the Greek word *choiros*, a pig, because that animal feeds upon acorns. The common Celtic name of the oak was *derw*, whence *druids*, and in Wales, where much of this extraordinary language is still retained, the names of many places, evidently derived from their proximity to forests, exhibit a reference to the ceremonial rites of those times in which the oak was so intimately connected as to render the Celtic derivation by far the most probable one. There are now known in this country about a hundred species and varieties. The most common species is *Q. robur*, which is supposed to be the true English oak, as it is more prevalent in the form of one of its varieties, *pedunculata*, than any other kind. *Q. sessiliflora*, another variety or sub-species of *robur*, is also found extensively, and in the New Forest, Hampshire, *pubescens*, or the Durmast oak, is common; the timber of the first and last is whitish and hard, while that of *sessiliflora* is reddish and brittle; the latter also is often erect in its growth, while in naval architecture, the others are esteemed for their crooked stems and branches, peculiarly adapted for ships' knees. Next in importance is the Turkey oak (*Q. cerris*), now extensively planted both for ornament and timber; three of its varieties, the Fulham, Lucombe, and Ragnal oaks, being of very handsome erect habit, and nearly evergreen, are in much request for embellishing park lands.

Among the American species there are several valuable trees, especially in the ornamental class. *Q. coccinea*, the scarlet oak, is particularly remarkable in autumn, on account of the bright red tints of its large foliage, which hangs upon the tree till near Christmas. *Q. rubra* also assumes a similar appearance, though scarcely so intense in colour. *Q. Phellos*, the willow oak, is a strongly-marked species, having linear leaves tapering to each end, and smooth, with small roundish nuts; the tree attains a considerable height. *Q. Ilex*, the evergreen oak, another esteemed species, is very generally employed in shrubberies, its oblong, leathery, deep green leaves, are very effective in forming the background of such plantations; there are several varieties of this species, among the most conspicuous of which are *crispa*, with holly-like leaves, *latifolia*, on account of its very ample foliage, and *variegata*, suitable for the front rows of dense masses of shrubs; these are all slow-growing trees, which seldom attain a great size, except in the western parts of the kingdom, where they are large and prevalent; the wood is reckoned as nearly equal in strength and durability to that of the common, but, for the reason just stated, they are to be regarded rather as ornamental objects than for their utility. *Q. virens*, the live oak, is another evergreen species, and for its great size, and strong durable wood, is accounted one of the most valuable timber trees of America;

where its dense manner of growing, and dark green persistent foliage, render it desirable for filling screens, or facing up the larger shrubs; this species is not unfrequently confounded with *Phillyrea*, the distinction between them, however, is manifest in the position of the leaves; in *alaternus* they are alternate, and in *Phillyrea* arranged in opposite pairs. As in the case with most plants cultivated for any length of time, there are several varieties of this species, not the least beautiful of which are those with variegated foliage: the white and yellow marginal kinds and gold-blotched leaved, are very striking among other darker coloured plants; the variety *angustifolia*, or *R. Clusii*, as it was called, is also remarkable for its linear, rigid leaves, and *balearica* is equally deserving adoption. Among the deciduous kinds there are several deserving culture, both for their appearance and usefulness. *R. cathartica* is much grown in France for its berries, the juice of these, expressed in an unripe state, is used for staining a saffron colour; gathered as soon as ripe, and prepared with alum, they afford a sap-green, but if left longer on the trees the juice is purple; they are the French berries of the shops. A fine yellow dye is extracted from the bark. A similar colour is obtained from the berries of *R. saxatilis*, which is employed in staining Morocco leather. The fruit of *R. frangula* is next in value to that of *R. cathartica*, both medicinally and in the arts; in an unripe state they dye green and yellow, and when further advanced, yield gray and blue. The bark alone imparts a yellow tint, and treated with iron, produces a tolerable black. The flowers of this and of *alaternus* are mellifluous, and are much frequented by bees. *R. Theezans* is employed by the Chinese in the adulteration of teas, and the poorer classes drink a decoction of the leaves as a substitute for the latter. *R. lycioides* has a peculiarly hard wood of an orange-red colour, and is in much request among the Mongols for carving images: these last two species are somewhat tender in our climate, but succeed when trained against a south wall. Most of the species grow with vigour in strong garden soil, preferring that of a loamy texture, and such as produce berries are readily increased by them, if sown in well-prepared soil on a warm position; the remainder are propagated by layers, which should be put down in autumn with a tongue, and will be fit for removal at the same period of the next year.

RHODODENDRON (LINN.) Nat. Order, *Rhodoraceæ*. This genus, by the attention of modern culturists, has been rendered truly splendid, and is now indispensable to every well-furnished garden. From the introduction of the noble Nepal species, *arborea*, may be dated the improvement of the family; the brilliant colours of that kind were all that could be desired to blend with the more robust sorts already known in our gardens, and with the lapse of a few years, seminal productions began to appear, each distinguished by a greater brilliancy than its predecessor; the number of such varieties of every possible lineage is now beyond calculation, and it is perhaps only difficult to obtain plants of the more showy species which may be considered quite pure of cross-breed inclinations. It happened, unfortunately for the earlier attempts at improvement, that the new forms partook largely of the precocious habit of flowering which distinguishes their male parent; this rendered them less valuable in the flower-garden, not that the plants themselves were made more tender, but the inclination to bloom at a very early period of the spring, which is only with difficulty suppressed in any, even of the older sorts, was here so increased as to make the escape of the bursting flower-buds from frosts a very rare occurrence. The experience of repeated efforts, however, went to prove that, in the second remove from the Nepal species, the produce returned to their normal character, in so far as the blooming is concerned, and with some additional care in selecting the parentage, it was also found that the deep rich tints so desirable might be retained, and hence has arisen the magnificent races which grace our hardy collections at the present day. An extraordinary discovery of still more recent date, by which the genera Rhododendron and Azalea were found to mingle, gave a new impulse to their culture, and by the employment of yellow-tinted Azaleas in the production of hybrid seed, a strain of primrose colour has been imparted to the Rhododendron. The genus contains about twenty hardy species, some of them natives of the coldest mountain regions, such as *R. ferrugineum, hirsutum,* and *Caucasicum,* terminating the ligneous vegetation of Alpine districts; the last is found within a short distance of the perpetual ice on the higher points of the Caucasus, and the others abound on the Alps of Switzerland, Austria, Piedmont, and Savoy. The stronger-growing kinds, such as *maximum, chrysanthum, ponticum,* and *dauricum,* are found only on subalpine regions, inhabiting the damp spots and fissures of mountain sides, considerably lower than the preceding; next beneath them occur *catawbiense, Camtschaticum,* and *arborea,* and in proportion to the altitude of their natural stations, the plants are found more robust; those of the lower range, though annually subject to much frost, and consequently hardy enough to bear our climate when in a mature state, commence growing and flowering a month too soon to render their progress secure or satisfactory; our late spring frosts frequently ripening the recent developments. Such kinds, therefore, as are naturally disposed to bloom before May, should be planted with a northern exposure, and if screened altogether from the south, their summer growth and autumnal ripening are retarded so far as to have an effect on the flower-buds, which, in that case, are expanded full a fortnight later, and so at a safer time. The attention of cultivators being directed to this matter, has resulted, as before remarked, in the production of varieties in which the native habit is overruled, and the blooming deferred till danger from frost is quite passed, and with ordinary attention in the choice of sorts and situation, an array of splendour throughout the month of May is now to be regarded as certain in the common average of seasons. Rhododendrons, though natives of elevated places, do not seem benefited by exposure to the direct rays of the sun, or to be improved by being allowed the best place in the garden: a gentle northern slope, with a slight screen on the southern side, appears to be a situation they delight in, and one that exhibits their beauties in the greatest perfection; in a hot sunny place the foliage is often scorched, the growth stinted, and the flower-heads few and small—all these effects being traceable to the influence of excessive heat and drought upon the roots. The soil usually prepared for them is peat or bog-mould; but as this varies considerably in texture and quality, it may be well in some cases to make an addition either of sand or loam, according as the principal material is more or less compact or porous; heavy, close-grained bog-mould, with but little vegetable matter in it, should be lightened by adding sand or leaf-mould, and that procured from heaths or commons is often too open for the purpose, and may be improved with a proportion of strong loam, the object being to supply the roots with a medium sufficiently loose in texture to allow of their penetrating it easily in every direction, at the same time it must be so compact as to retain the necessary degree of moisture. The fibres of these plants being very delicate, will not bear extremes of any kind, and an observance of this peculiarity will best enable the operator to judge of the fitness of his soil. They will grow in certain kinds of loam that are friable and loose, quite as well as in peat, though the difficulty in procuring the former of the exact quality necessary has led to the more frequent use of peat. The plants are now more extensively raised from seed than by any other method, though both layers and cuttings may be employed; the first method involves more time, but there is the probability of originating superior varieties to compensate for the extra trouble. The splitting of the pericarp indicates the seed to be ripe, and it should then be gathered, preserving it in bags till the following spring, when it may be sown in pans of light heath-mould, pressed rather firm and quite level; distribute the seed evenly over it, and cover as thinly as possible; place the pans in a gentle hot-bed, and in a few weeks the plants may be expected to make their appearance. When about an inch high they may be transferred to other pans, and by keeping them in a close frame, shaded, and moderately moist through the summer, they will make nice little plants by the autumn; the same frame may hold them in winter, and in the next spring they will bear removal to the open ground. The planting out should be done in April, and it will be necessary to carefully water and shade them through the succeeding hot weather, to encourage a vigorous development of shoots. The strongest will flower in the third season, and immediately after should have the terminal bud removed, in order to induce the production of branches and make bushy plants; their subsequent removals must be regulated by their growth, and the more often young plants are shifted, the greater number of roots will be made. Layers may be formed any time between midsummer and winter, of the current season's growth, cutting a tongue to each, and laying them into very sandy peat; they are fit for removal in twelve months. Cuttings are troublesome, because so long in hand; the half-ripened wood makes the best, and should be struck in sand, covered with a bell-glass on a gentle heat. The finer sorts are very generally increased by working upon the more common, and is the quickest means of raising a stock, besides the advantage reasonably to be expected in imparting additional strength to the scion by placing it upon a robust stem; the common method of whip-grafting succeeds with them, or if the increase is desired to be very great, shield-grafting is employed: by either method the plants require some nursing till the union is effected, and therefore the stocks should be previously grown in pots.

Our space will not allow the enumerations of the many fine varieties in cultivation, but the following selection contains some of the handsomest of the standard species and their offspring: *Alta-clerense,* crimson: *arboreum,* scarlet; *a. niveum,* white; *a. Paxtonii,* crimson; *a. roseum,* rose; *a. undulatum,* rich pink; *a. venustum,* pink spotted: *campanulatum,* pale rose: *Camtschaticum,* purple: *catawbiense;* purple; *c. Russellianum,* bright rose, spotted; *c. tigrinum,* deep rose, richly spotted: *Caucasicum,* purple; *C. Nobleanum,* deep red; *C. pulcherrimum,* pale rose; *C. Standishii,* rich red; *C. stramineum,* primrose: *chrysanthum,* yellow: *dauricum,* purple: *ferrugineum,* scarlet: *hybridum,* pink; *h. formosum,* large rose: *hirsutum,* scarlet, very dwarf: *maximum,* pink; *m. album,* white; *m. hybridum,* white and purple: *ponticum,* purple; *p. Lowii,* white; *p. magnifica,* shaded rose; *p. obtusum,* purple; *p. odoratum,* rose; *p. pulchrum,* deep rose: *punctatum,* rose, curiously mottled: *rhodora,* pale purple; the last named was formerly regarded as generically distinct, and was known as *Rhodora canadensis,* closer investigation, however, has attached it to Rhododendron. When these plants are introduced to plantations bordering pasture-land, they should be carefully fenced in, as the effects of their leaves upon cattle, that may happen to browse upon them, is found to be very injurious; besides which, the plants are thus seriously damaged.

RHUS, *Sumach* (LINN.) Nat. Ord. *Anacardiaceæ.* This genus contains several hardy trees and shrubs, having inconspicuous green flowers, in some species followed by berries of strong medicinal properties, and most of them possess handsome foliage; and, being for the most part rapid growers, are occasionally introduced in large shrubberies or the arboretum. The most common species is *R. typhina,* the Virginian, or Stag's-horn Sumach. This is frequent in suburban gardens, where its large pinnate leaves, on the robust, woolly, blunt branches, are very striking; and, as it is found to bear the smoke and confined air of those districts, may be safely recommended for such places. It is also the largest of the genus, often attaining twenty or thirty feet in height. It is readily increased by suckers or layers, and grows in any soil or situation. The flowers are hermaphrodite in some species, while in others the male and female blossoms are borne on different plants. The most remarkable species is the *Rhus toxicodendron*, or Poison Oak, a deciduous creeping plant, with ligneous stems, and rather large, entire leaves. It possesses a virulent poison, affecting some persons more than others, and in various ways. Instances are recorded of the juice completely excoriating the hands of the person touching the plant. Kalm relates a singular case—that of two sisters, one of whom felt no inconvenience from manipulating the shrub, whilst the other was affected by its venom, when even a yard off. There are three varieties of it, all natives of North America, but growing freely with us in any common soil, but should always be planted in an out of-the-way place, lest persons, unconscious of its properties, receive injury by handling it.

R. vernix is another poisonous species, assuming the form of a low tree, every part of which is in a high degree venomous, and the more dangerous because communicated even by touching or smelling. The effects of this poison are exhibited in strongly inflamed pustules, which rise upon the affected parts, and continue for two or three days, when they burst in the manner of ulcers. The inflammation then subsides, and they speedily heal. Like the other species, the virulence of this is of variable degree upon different persons, and on some it has no effect. This species yields the true Japan varnish, which is obtained by making incisions in the tree, from whence oozes a liquid, at first colourless, but becoming thick and dark by exposure: it is probably the most transparent varnish known. *R. pumila* is another dangerous species, and, with the preceding two, should not be admitted to parts of the garden within reach of visitors or children. *R. coriaria* and *cotinus* are cultivated in some places for tanning leather, and the berries of several kinds afford an oil, which thickens by exposure, so as to be substituted for tallow. In our climate the North American and European species grow with freedom in light and rather dry soil, and are increased by layers, suckers, or seeds.

RIBES, *Currant* (LINN.) Nat. Ord. *Grossulaceæ*. A considerable number of species belonging to this genus are admitted in ornamental plantations; and those which are decidedly inferior in point of beauty are so remarkably docile in habit, as to suit themselves to any situation, and are therefore valuable for filling spaces beneath large trees, where little else will grow. A considerable variety is also observable among them, some partaking largely of the character of the common currant, and others having the leaves like those of the gooseberry. Perhaps the most ornamental of the tribe are *albidum*, *atrosanguineum*, *aureum*, *sanguineum*, *sang. plena*, and *speciosum*. *Albidum* and the double variety of the scarlet currant are comparatively new, and both very beautiful. Either and all of those named deserve to be planted in the fronts of shrubberies, and are very effective in spring. The beauty of *sanguineum* as a spring-flowering shrub has led to its universal adoption, and we now find it in gardens of all sizes. The remaining portion of the genus, not cultivated as fruit trees, may be regarded as best suited for the wilderness quarters of the establishment, thriving in any soil, under trees or in any other position. The better kinds should be grown in moderately rich soil, and, with a little annual attention to pruning out superfluous shoots, will render their places gay through March and April. The whole are readily propagated either by suckers or cuttings, taken off in autumn, cut into lengths of five or six joints, and planted in a border of light earth: they make specimens fit for removal in two years. *Sanguineum* appears inclined to vary a little in the depth of its colour when originated from seed, and the double variety was thus obtained, in an accidental manner, a few years back, among a number of seedlings, in Scotland. The berries of all the ornamental kinds have an austere flavour, something like that of the black currant, but with more acid. The trailing species, *procumbens* and *reclinatum*, have a pleasing appearance grown upon rockwork, where their scrambling habits impart a naturally wild aspect to the work.

ROBINIA (Linn.) Nat. Ord. *Leguminosæ.* There are two species of Robinia which claim to rank among the best of our ornamental trees: they are *R. pseudacacia* and *hispida.* The first is commonly known as the thorn acacia, and, for its delicate, bright green, pinnate foliage, and numerous pendent racemes of odorous white flowers, is much esteemed in the garden. This acacia, regarded as a timber tree, is worthy of more consideration than is commonly given it. In the earlier stages of its growth the progress is more rapid than that of most others, and thus the tree arrives at a useful size in a comparatively short space of time, added to which, the strength and durability of the timber, when well seasoned, is at least equal to oak. In an unseasoned state, it is but little inferior, the proportions being, in stiffness, acacia 99 — oak 100, and in strength 96—100. A piece of unseasoned acacia, two feet six inches long, and an inch square in the vertical section, broke when loaded with a weight of 247 pounds avoirdupois. Its medium cohesive force is about 11·500 pounds. (*Dict. of Arch.*) The durability of the acacia, even in the most trying positions, is beyond question very great, and for piles or gate posts, it is decidedly the best material which can be used. The American shipbuilders esteem it greatly, and employ it for treenails, and was it more abundant, there is no doubt of its fitness for other purposes. The branching habit of the tree would render it suitable for knees, foothooks, or other positions in which compass timber is required. Cobbett paid much attention to the tree, and by him it was spoken of under its American name, the locust tree. The wood being close-grained, hard, beautifully veined, and susceptible of a high polish, is also adapted for cabinet work; yet, with all these qualifications, it is very little grown, otherwise than as an ornament, in this country. The only reason by possibility assignable for this neglect, is perhaps found in the liability of the tree to injury from heavy storms of wind, when the upper branches not unfrequently are blown off, slipping out at the articulation with the main stem; this objection may be sufficiently cogent to account for the few attempts made to raise large timber, but though ever so forcible in this respect, it does not prevent much useful stuff of a smaller size being grown, nor indeed does further injury arise even in the worst cases, beyond the loss of the parts broken, for the tree continues to grow uninterruptedly, however much damaged. This inclination to stole seems to fit it equally for coppice wood, and that it may be profitably cultivated in this way has been sufficiently proved; cut over at five or six years, it breaks again with the utmost freedom, and forms capital straight poles, very durable, and tall enough for all ordinary purposes. The acacia has another good quality, it may be grown on soils that will not produce oak, chesnut, or other hard woods, for but little difference is observable whether grown on wet or dry lands. Like all other woods, the durability of this is materially improved by barking, and its value in this respect pays for the trouble of peeling. For rustic work, acacia poles are excellent; their rough exterior, the ease with which they are wrought, and the length of time they remain sound, renders them peculiarly fitted for such purposes. Established trees produce seed in abundance, and their multiplication is consequently a very easy matter; it should be sown in February or March, in beds, on a sandy soil, covering the seed about an inch deep, and in the following spring the young plants will be fit for removal to nursery rows. Here, on account of their rapid growth, more space should be allowed than is usual with forest trees of the same age, especially if they are likely to remain undisturbed for a longer period than two years; eighteen inches between the plants, and three feet between the rows, will not be too much; and in planting, the tap-root should be taken off, for in light, deep soils, this runs so far downwards as to render their subsequent removal difficult. Four or five years' old plants are the best for final planting, and if they are intended for timber, the planting should be rather close, and if the outside can be filled with a double row of some other fast-growing trees, at least on the windward side, it will be of assistance to the acacias in preserving them from damage at a future stage. There are several varieties, distinguished either by their habit or the colour of their flowers: among the most beautiful—*luteo,* yellow; *macrophylla,* white; *monstrosa,* white and red; *pendula,* pink; and *spectabilis,* white. *Robinia hispida,* the Rose-acacia is an admired ornament of the shrubbery, it is a low-growing tree with spreading branches, which are clothed with dark red hairs while young, handsome pinnate leaves, and copious racemes of large deep rose-coloured flowers. It requires a sheltered position, or the branches are very liable to injury from heavy winds; on this account it is generally kept comparatively dwarf by pruning. A very suitable position, in which the flowers are finely developed, and the tree seen to advantage, is when trained against a wall or espalier frame; its otherwise straggling habit is not then perceivable, and every branch can be preserved. This species seldom produces seed, and the usual mode of propagation is by grafting upon stocks of the common acacia. The union is made in the ordinary manner of whip-grafting, but it must be done very low, in fact, a few inches below the surface of the soil is better than above it, the object being to keep the tree as dwarf as possible, and to prevent a severance of the graft from the stock; for when the plant is grown up, it is extremely probable, if worked upon a taller stem, that the entire head may be blown off. The rose-acacia succeeds best in a rather poor, light soil, and if the points of the shoots are taken off annually, it will put forth numerous spurs on the lower parts of the branches, which produce flowers, and render the tree compact in form. Three varieties are cultivated, the finest of which is *macrophylla,* with deep red flowers; the others are *nana,* a neat-growing plant, with pink flowers, and *rosea,* which has its blossoms a shade or two darker than those of the species. The other hardy *Robinias* are *davurica,* with white and red flowers; *dubia,* which resembles it; and *viscosa,* approaching more nearly to *R. pseudacacia,* having pale purple flowers, but has a neuter habit of growth, on account of its smaller branches, which are clothed with hairs, in the manner of *hispida,* but shorter, and clammy with a viscid juice while young. All the *Robinias* are deciduous, losing their leaves among the first in autumn, and reproducing them late in spring.

ROSA, *Rose* (LINN.) Nat. Order, *Rosaceæ.* This flower, by its beauty and fragrance, has engaged attention from the earliest periods of civilization, and though cultivated almost unremittingly throughout, is even yet capable of affording novel varieties. The name of the family is derived from the Armorican *rhos,* or Celtic *rhod,* both signifying red, the prevailing colour of the original species. Botanists of the present day enumerate about one hundred and forty species and subspecies, whose geographical distribution extends over a great portion of the earth's surface; they are found in nearly all the cooler regions of Africa, Asia, North America, and are common throughout Europe. In the *Rosarum Monographia* of Lindley, they are divided into ten sections, distinguished by some permanent characteristic—as in § 1, *Feroces,* the branches are clothed with a tomentum, have numerous thorns and bristles, and smooth, naked fruit. § 2, *Bracteatæ,* is distinguished from the above by its woolly fruit, shining leaves, and having a pair of small thorns beneath the stipules; the Macartney rose is an example. § 3, *Cinnamomeæ,* is known by the erect habit of the plants, their long lanceolate leaflets without glands, and their small, round, red fruit; the common cinnamon rose will be recognised in this. § 4, *Pimpinellifoliæ,* the absence of bracteas to the flowers, and of stipular prickles, together with a greater number of leaflets, and difference in habit, distinguish this group, the type of which is the Scotch rose. § 5, *Centifoliæ,* contains the most ornamental of our garden roses; the group is known from the preceding divisions by the thickened disc, and divided sepals; and from the following sections, by bearing bristles along the branches; the Damask, Provence, and French roses are included in it. § 6, *Villosæ*, distinguished by their straight thorns and the diverging serratures of the leaves; the white rose, and its varieties, the celestial, maiden's blush, &c. are examples, § 7, *Rubiginosæ*, readily known by the numerous glands on the lower surface of the leaves, the variable size of their thorns, and their arched root-suckers; the Austrian and sweet-briars are familiar instances. § 8, *Caninæ*, the equal, hooked thorns, the ovate glandless leaves, and deciduous sepals, distinguish this section; the China, noisette, and fairy roses are contained in it. § 9, *Systylæ;* the adnate stipules, and styles cohering into a lengthened column, afford the most obvious marks of this section, which comprehends several valuable kinds, among which are the Ayrshire, Boursault, musk, and evergreen roses. § 10, *Banksianæ*, may be known by its graceful trailing habit, ternate shining leaves, and deciduous, subulate, or narrow stipules; the elegant Banksian rose is the type. This arrangement is now generally adopted by systematists; and it is much to be regretted that a more understandable method, coinciding with its leading features, has not yet been adopted by the florist, or one at least possessing some general plan, which in its divisions shall convey an idea of the characters of the kinds it contains.

In cultivation, the rose succeeds best in a deep, rich, rather moist loam; it requires pure air, and many of the kinds some shelter; it is next to impossible to grow a collection in soil or situation of an opposite character, though a limited number of sorts may be had to bear the confinement and smoke of suburban districts. Soil being more immediately improvable, and in most cases entirely under command, should have the necessary preparation and additions made to render it suitable, as a previous step, in all situations; for even in the best positions, it undoubtedly exercises a great influence on the future success of the plants. Clayey or wet land is improved by draining and burning the surface, to be afterwards mixed with the staple: and light soil by the addition of loam and cow-dung. It is necessary, in most cases, to keep the ground in good order, to give it a dressing of manure every season, but as an error may be easily committed in the application, it should be borne in mind, that the quantity and quality must be determined by the character of the soil; so much as will keep it in condition to produce healthy vigorous shoots, is of course, indispensable, but any excess leads to disappointment in the production of monstrous flowers, or a paucity of bloom, with watery immature growths, very liable to injury in the winter. Upon damp strong land, a moderate application of old hot-bed manure, mixed with road-scrapings, will be most satisfactory; while upon that of an opposite nature a larger quantity of manure of a cooling persistent character, such as soap-lees, super-phosphate of lime, or cow-dung, will have the best effect. The best time for planting is as soon as the wood is thoroughly ripened in autumn, if this can be had early in October, it will be better than deferred till the next month; or if circumstances do not permit the removal to be made till spring, it should be done early in March, and subsequently the trees must be well tended in hot weather, with water and mulching about the roots. As regards situation, if choice can be made, an open spot on the southern slope of a gentle declivity is perhaps the best, or the western side would be preferred by some; under any circumstances, they should be guarded from the cutting winds of the north; and where the trees are collected together in a rosary, this is to be effected by a hedge of holly, laurel, or some other evergreen, placed at such a distance as to prevent the encroachment of its roots upon those of the roses; brick or stone walls are by no means desirable, as if the roses are stationed near them, the reflected heat in summer is excessive, and the duration of the flowers considerably shortened. When roses are cultivated merely as adjuncts to shrubbery or flower borders, these particulars are of less consequence, as usually only the hardier sorts are thus grown, and the proximity of the shrubs is a sufficient protection from cold in winter, and their shade guards them from overpowering heat in summer.

It is useless, however, to think of growing the best kinds to any degree of superiority in this manner, for the vast number of roots proceeding from the shrubs so impoverishes the ordinary class of soils as to render them quite unfit for roses. Certainly, the best manner of cultivating these charming flowers is in groups, which may be varied in form or extent, to suit any garden, and are equally appropriate and pleasing in all. The basket of moss, or other dwarf roses has its interest in the smallest garden, proportionably with the most extended rosarium; and by this method increased facility is offered in their management, both as regards soil and situation, and also in the subsequent routine attention. The attractions of a good collection of roses, judiciously arranged and well managed, are certainly unsurpassed by the merits of any other open-air family; their brilliancy, variety, fragrance, and enduring continuance make them deservedly favorites in all circles, and whether the rosary be the principal feature of the establishment, or occupy only the position that refined finish may allot it in connexion with other attractive objects, it will be equally visited, and being as well suited to the care of an amateur as worthy the attention of the most experienced professional, may be as properly recommended where only half a dozen square yards, or a hundred are to be planted. No very definite directions can be given for arranging the rosary, taste working upon existing circumstances must determine it; though, in general, a series of beds, either circular or rectangular are most convenient, because by varying their size the several groups may be accommodated, and the method admits of additions being subsequently made without disturbing the established portion; but whatever its size or form, no other plants should be allowed on the prescribed space, or at least nothing more than a few prostrate-growing things to cover the earth between the stems, or in front of the borders. The approaches may be made through avenues of tall standards, the boundary marked by climbing kinds, trained in festoons upon chains, suspended from posts, and as a central object, either a heap of large stones, on which the creeping kinds may ramble, half a dozen light rustic pillars, supporting a roof to be covered with climbing sorts, or a little grove of weeping roses, will be appropriate. In working out a design of almost any kind, it will be found best to arrange the standards either in lines or to isolate them; the latter is preferable, as they do not group well, and when standing alone their flowers are seen to greater advantage. Each class, whether China, French, or hybrid kinds, should be collected together, and its nearest ally may follow; this brings out more fully the several characteristics of each section, and by observing affinities, the connexion of one class with another through their hybrids is made evident; the introduction in each section of the species, in its natural form, from which the group is supposed to have sprung, would be consistent, and show at a glance the advance that has been made in the improvement of races.

The propagation of roses is effected in all the usual ways; suckers, layers, cuttings, budding, and grafting are all occasionally employed. By the first method, the Scotch and other kinds, of similar habit, are generally increased; layers succeed with all kinds; cuttings are seldom taken from any but the China and Bourbon classes and their varieties, though all, or nearly all, may be thus propagated with some trouble; budding is the most usual mode of increasing the majority of the classes, and, in the hands of the experienced, grafting is attended with considerable success, though to the beginner it is the least promising method. Seed also is to be regarded as a means of increasing, and of the production of new varieties. Propagation by suckers needs no further description than that they are taken off in the autumn, and treated as mature plants; layers are usually formed of the half-ripened wood of the current year's growth, and should have a tongue cut in the under side of that portion of the branch which is to be buried in the earth: they are generally fit for detaching in a twelvemonth; thus those done after midsummer in one year, are fit to be taken off in the autumn of the following; the practice is common with the dwarf moss, Provence, and French roses, and is applicable to all that do not strike freely, and yet are desired to grow on their own roots; cuttings are best when made of young wood, just so firm as to be beyond the danger of rotting; they should be taken off the parent plant close to the junction, leaving the heel, and if necessary, may be foreshortened to three or four joints; they require light sandy soil to strike in, and so much protection as will keep a quiet, moist, and moderately warm atmosphere about them, such as is afforded in summer by a handlight upon a south or south-west border; plants produced in this way are generally the best for pot culture, as it induces a great number of small fibrous roots, so essential when the range for food is limited. Many of the China and other early flowering sorts may be made, by the aid of a gentle heat, to produce wood fit for cuttings at an early period of the season, before it will be safe to trust them in the open ground; such cuttings strike freely, if potted and placed in a moderate hotbed; though it is a question if we do not thus raise more tender plants than would result if only summer propagation was resorted to. On the other hand, it is advisable to have the cuttings struck as early in summer as possible, that there may remain time for them to be potted, and become established before the winter; or if it has been impossible to accomplish this, it is better to leave them undisturbed where they were struck, till the succeeding spring.

Budding is always resorted to in the formation of standards, and is to be regarded as the best means of propagating all the weak-growing kinds, which require some addition to their natural vigour, to have them bloom in their most perfect state. It answers equally well, whatever the position designed for the plant, and by this method the increase may be carried much further than by any other, as every eye will thus form a distinct plant.

It may be done through any of the summer months, the season extending from the end of May till that of September. A difference of opinion exists as to the exact period most conducive to success, some cultivators recommend the operation to be performed as early as possible, others defer it till the autumn; by adopting the first opinion, and inserting the buds some time in June, or beginning of the following month, we have, in propitious seasons, the plants formed in the same summer, and, instead of a single eye to start from in the next year, there are several, and thus a considerable advantage is obtained; the objection to be urged to early budding is, however, sufficiently cogent to deserve consideration; the weather at this period is often unsettled, and not unfrequently marked by squalls of wind, which break down the branches of the stocks, and displace the buds; added to which, is one of still more serious nature, the buds may push with vigour, and form excellent growths by August, when the autumnal winds too frequently dislodge them completely. By deferring the work till near the end of the season, the buds are nearly certain to remain dormant till the following spring, and having in that time become securely fixed, break strongly, and the cultivator need be under no apprehension of their blowing off. The plants are of course smaller, because they are, as it were, a whole season younger than the others, and the method may therefore be designated as slow, but sure. The best stocks for such roses as are intended to be permanently planted out of doors, are those of the common wild dog-rose of the hedges (*R. canina*): these are durable, impart the greatest amount of vigour, and, being among the hardiest of the family, have a tendency to render the varieties they carry better able to bear our climate. For such as may be desired to grow constantly in pots, however, the Boursault offers the best stock, because of their greater number of roots. The latter is decidedly superior to the dog-rose in this respect, and in the freedom of its growth, but is not so enduring. The chalk hills of Surrey furnish some of the best stocks of *R. canina*, the soil of those parts being conducive to the spread of fibres, and of course the greater the number of these essential organs, the more vigorous and certain will be the progress of both stock and scion. As regards the choice of stocks, a word of caution may be useful: those with crooked stems can never subsequently be made handsome, and had better be cut down below their irregularities, and, above everything, they should be quite fresh when planted, for any that have been exposed to the wind, and become dried at the roots, seldom grow again; so important is this, that not an unnecessary hour should intervene between taking up and replanting, and even during the transit from the hedgerow to the garden, the roots should be carefully covered and kept damp; to buy stocks of persons who hawk them through the streets is very similar to throwing money away, for in all probability they have been taken up many days, and during the time have become so thoroughly wind-dried, as to make their after progress at least problematical. The budding knife should have a keen edge, and a thin, flat haft of bone or ivory, and when the bark rises freely upon the new wood of the stocks, the budding may be done; cloudy weather, when there is little or no wind, should be selected if possible, and having at hand some strips of bass matting to tie with, pass the knife just through the bark of the recent branch, close to its union with the main stem, and continue the cut about an inch and a half, longitudinally, up the branch; near the termination of this cut make another cross-wise, extending nearly half the circumference of the branch, so that the two may form a mark like the capital letter T; then prepare the bud, by entering the knife half an inch above it, and cutting the piece as thin as possible, to secure the entire of the bud, bring it out about an inch below; the small piece of wood attached to the bud is then to be taken off, by slipping the edge of the knife under the lower end, between it and the bark, and taking its point between the knife and thumb-nail, by a smart jerk it will be entirely detached, leaving the eye in the piece of bark or shield. It will sometimes happen, when the wood is a little too old that the eye is withdrawn along with the wood; this must be looked to, and if a small round hole is seen in the bark, it is evidence the bud is gone, and we must then procure the buds from younger shoots: those taken from the upper end of recent branches do not always require the wood to be taken away, for if it is very soft and young, the union with the stock is not interrupted by its presence. Immediately the bud is made ready, which should be done as quickly as possible, the edges of the cut, previously made in the stock, should be raised with the haft of the knife, and slipping the lower end of the bud under them, it is to be gently thrust down into its place, the upper end, if too long, being cut to fit, and then neatly and tightly bound round with the bass. If inserted in the beginning of the summer, the successful buds will begin to grow in about a fortnight, and the bandage must then be loosened, and the points of the branches of the stock may be stopped; taking care, however, to preserve through the whole of the season a leading shoot beyond each bud, to draw forward the sap required for its support. Three buds, on as many branches triangularly placed, may be regarded as sufficient for each stock; but the practice of inserting more than one kind cannot be too strongly reprobated, for, except as a mere curiosity, such a plant is never desirable; indeed, the chances of two or more sorts flourishing in unison are so small as not to be worth the risk of spoiling either, which is most likely to occur, either from accidental causes, or an excess of vigour in one or other; the strongest grower then takes the greatest share of nourishment, while the other remains a poor stunted object as long as it exists. When the buds have fairly started in the following spring, the branches and head of the stock may be cut away, and the subsequent management will be that of the parent whence the buds were obtained. Grafting is performed in March, by the mode known as crown grafting; the stock is cut over at the required height, and the scion fitted into a longitudinal cleft cut in it, extending about three inches down the stock, and just so deep as to touch the pith at the upper end the juncture must be covered with grafting wax, which, as soon as the scion grows, is to be removed. There is an advantage attending this method, in so far as, when successful, we obtain a large plant in the least time; and further, should the graft fail, there is no other loss, as the stock will grow again in time for budding. By whatever method produced, the young branches must be carefully tied to stick, sas they advance through the first season, to prevent injury from wind or other causes, and the earlier ones may be stopped, to induce bushiness.

Roses are "worked," as it is termed, at various heights, and these are denominated dwarfs, or such as branch away close to the ground; half-standards are those which have a clear stem, from eighteen inches to two feet in height; and standards having a stem three feet and upwards, before they form a head. All are appropriate in the garden, when judiciously arranged, but for pot-culture, to which branch of their management we propose now to direct attention, only the dwarfs and low standards can be considered fitting. The growth of roses in pots is one of the most interesting pursuits of the florist, and amply they repay the extra trouble of thus managing them; the additional requirements are only a cold pit or well-ventilated greenhouse, and when the superiority of the flowers, and the perfect richness of the foliage thus obtained, is considered, no regret will be felt at the space they may occupy. The matter of most consequence in connexion with this part of the subject, is to secure, by all means, plenty of roots, and on this account, when worked plants are desired, the Boursault stocks are preferable; so also it is advisable to begin with small plants, and to carry them through a regular course of shifting, as it will be found the number of fibres is greatly increased by this treatment. When stationed in pots, it is necessary to supply them with the best and strongest soil; the top spit of a loamy pasture, mixed with one third half-rotten manure, and a similar quantity of road scrapings, laid together for twelve months, form one of the most promising composts, and, except a few of the most delicate China and tea-scented roses, will suit the whole tribe without further addition; the exceptions are such as the white and crimson (Fabvier), China, and the Lawranciana, or Fairy roses: these succeed best when about equal parts of peat and loam are used. Young, free-growing plants, will require repotting twice or thrice in the season, according to their progress, but the shifting of established specimens should only take place annually, in October; let them then be stationed in pots large enough to carry them through the succeeding year, the sizes varying, as a matter of course, with those of the plants, eight, ten, and twelve-inch pots being sufficient for the larger plants. Through the winter they should stand in some sheltered place, where the greatest power of the frost may be broken, and a thick layer of ashes should be spread for them to stand on, and hoops should be bent over, on which, in the severest weather, a few mats may be thrown, which is usually protection enough for the majority of the family.

About the end of February or beginning of March the pruning may be done, both on these, and also those in the open ground; autumn pruning is objectionable, because it is found to excite the retained buds, often causing them to push before the weather is at all settled in spring, and the wounded end of the branches is frequently frozen so as to kill it. The habit of the plant is to be regarded as the chief indication of the amount of pruning necessary: the very strong-growing kinds require but little shortening, and when too thick, should have some of the branches taken completely out, while those of slender, weak habits should be spurred closely in; leaving upon the strongest from six to twelve eyes or buds upon each branch, and on those of opposite character only three or four. The potted roses are then to be removed to a cold pit or frame, where they are to be brought gradually on, and by the liberal admission of air, their progress will be gradual, and the growths as strong as upon those in the open air, while, by guarding them from cold winds and ungenial weather, it will be uninterrupted, the foliage perfect, and ultimately the blooms partaking of these advantages will be produced with a corresponding superiority. From the time the buds have fairly begun to grow, they will require constant attendance with water, and up to the opening of the flowers, much benefit will be conferred by syringing two or three times a week; and when in full bloom their splendour will be prolonged by a slight shade.

Insects must, of course, be looked for, and destroyed, as well on these, as on the out-of-door plants: the most mischievous is the leaf-roller grub, which will be found on the points of the shoots as soon as they have two or three leaves, and requires constant attention; there is no effective remedy for these pests but hand-picking; green flies are easily kept down by fumigating with tobacco, and red spiders will be prevented by the syringing recommended. Additional vigour and great richness of colour will be imparted to both foliage and flowers by a top-dressing of rather strong manure, applied just as the first buds are visible, or liquid manure, given two or three times a week, will have the same effect. After flowering, the plants may be placed in the open air to ripen their wood, and this will occupy them till the season's treatment begins again with the autumnal repotting. Roses for forcing should be potted at least one year before they are introduced to heat; the usual method is to plunge the pot in the open ground, through the first season, and, after pruning in October, to bring them gradually forward, or prepare them in a cold pit till the end of December; they are then placed in the forcing-house, successively through the next three months, and being attended with water in the usual way, open their flowers in six or eight weeks after being placed in heat. As in this pursuit the main object is quantity of flowers, rather than quality in them individually, the freest-blooming kinds are most appropriate, and those which have a deep colour will be preferred to the paler varieties.

Raising roses from seed is an interesting pursuit, but little attended to in this country, though practised to so great an extent in France; it is easy in all parts, except the obtaining of mature seed from the better varieties, which in our climate does not often occur in the open air; and this circumstance is doubtless the cause of the seeming neglect which has hitherto attended this part of their culture. When ripe hips can be gathered in October, they should be taken from the tree before they are much frozen; the seed cleared out, and at once buried in sand, placing first a layer of sand in a large pot, then a sprinkling of seed, and again, more sand, continuing them alternately, till the pot is full; the seed is thus to be kept till the following April, when it may be sown in the usual way, in pans of light loam, and plunged into a moderate hotbed; some of it will come up the same season, and the remainder in the following; the young plants should be potted off as soon as they can be safely handled, and afterwards are to be treated with a frame, and nursed till strong enough to be trusted out of doors.

From the almost boundless list of varieties now cultivated we select the following, as being particularly deserving of notice, and have arranged them in groups according to the purposes they seem best adapted for.

Pot Roses—*Summer*. Moss: Foncée, Heloise, Malvina, Princess Royal, White Bath; Hybrid Chinese: Comtesse de Lacépède, Général Allard, Général Kléber, Lady Stuart, Triomphe de Guérin: Hybrid Bourbon: Charles Duval, La

Dauphine, Paul Perrus, Richelieu; Alba: La Séduisante, Madame Audot, Sophie de Marsilly.

Autumn. Perpetual: Augustine Monchelet, Baronne Prévost, Count de Montalivet, Dr. Marx, Duchesse de Galliera, Jacques Lafitte, Mathilde Jourdeuil; Crimson Chinese: Alcine, Eugène Beauharnais, Fabvier, Reine d'Angleterre; Tea-scented: Adam, Devoniensis, Eliza Sauvage, Josephine Malton, Moiret, Souvenir d'un Ami, Vicomtesse de Cazes; Bourbon: Armosa, Beauté de Versailles, Coupe d'Hébé, Georges Cuvier, Le Camée, Madame Beluze, Marianne, Paul Joseph, Raymond, Souvenir de Malmaison, Theresa Margat. These succeed best, producing the finest flowers under protection, though some will bear the open air.

Show Roses; having large and double flowers, very effective as standards.

Summer. Damask: Madame Hardy, Triomphe de Rouen; Provence: Adrien de Cardoville, Comtesse de la Roque, Cristata; Moss: Alice Leroi, Comtesse de Noé, Etna, Laneii, Louise Colet; French: Adèle Prévost, Berenice, Boula de Nanteuil, Cécile Boireau, Colonel Coombs, Duc de Valmy, Eclat des Roses, Franklin, Grandissima, Kean, La Volupté, Latour d'Auvergne, Ne Plus Ultra, Nelly, Orpheline de Juillet, Sophie Duval; Hybrid Chinese: Brennus, Chénédolé, Général Jacqueminot, Marjolin; Hybrid Bourbon: Charles Duval, Coupe d'Hébé, Victor Hugo; Alba: Félicité Parmentier, Madame Campan, Princesse Lamballe.

Autumn. Hybrid Perpetual: Comte d'Egmont, Duchess of Sutherland, La Reine, Robin Hood, William Jesse; Chinese: Archduke Charles, Madame Bréon; Tea-scented; Comte de Paris, La Renommée, Maréchal Bugeaud, Moiret, Triomphe du Luxembourg; Bourbon: Acidalia, Dupetit-Thouars, Madame Souchet, Marquise du Moyria; Noisette: Lamarque, Phaloè.

Climbing Roses—*Summer.* Boursault: Amadis*, Elegans, Gracilis; Ayrshire: Countess of Lieven*, Dundee Rambler*, Grevilleii, Queen of the Belgians,* Ruga*, Splendens*; Banksiæ: White, Yellow; Evergreen: Carnea grandiflora, Félicité Perpetue*, Léopoldine d'Orléans*, Princesse Louise, Spectabile*:

Autumn. Noisette: Du Luxembourg, Grandiflora, Cloth of Gold, La Biche, Solfaterre, Vittellina; Tea-scented: Aurora, Buret, Originale. Those marked * succeed in shady places.

Yellow Roses. Austrian: Harrisonii, Persian Yellow; Tea-scented: Devoniensis, Diana Vernon, Eliza Sauvage, Safrano, Vicomtesse de Cazes; Noisette: Clara Wendel, Pactolus, Solfaterre.

Window Roses. Crimson Chinese: Carmin d'Yébles, Duchess of Kent, Fabvier, Louis Philippe; Tea-scented: Belle Allemande, Hardy, Taglioni; Bourbon: Mrs. Bosanquet, Souvenir d'Urville; Noisette: Aimée Vibert, Euphrosyne; Miniature Provence: De Meaux, Dwarf Burgundy, Spong, White Burgundy; Laurencianas: Fairy, Nemesis, Rubra.

Winter Roses. Crimson Chinese: Bardou, Belle de Florence, Fabvier; Tea-scented: Bride of Abydos, Fragrans, Goubault, La Sylphide, Nina, Nisida; Bourbon: Armosa, Celimène, Comice de Seine-et-Marne, Queen, Splendens; Noisette: Fellenberg, Vittellina. These flower from November to February in a common greenhouse or sitting-room.

Bedding Roses; free-blooming and showy kinds, effective in masses, and well adapted for borders.

Summer. Provence: De Nancy, D'Angers, Délice de Flandre, Mathilde de Mondeville; French: Athalie, Anacreon, Assemblage des Beautés, Cerise superbe, Duchess of Kent, Eblouissante de Laqueue, Feu brillante, Napoleon, Superb Tuscany; Hybrid Chinese: Aurora, Beauty of Billiard, Chénédolé, Ne Plus Ultra, Smith's Seedling; Hybrid Noisette: Adalilla, Belle de Rosny, Madame Plantier, Marie de Nerri; Hybrid Bourbon: Comtesse Molé, Elisabeth Plantier, Great Western, Henri Barbet.

Autumn. Hybrid Perpetual: Edward Jesse, Lady Fordwich, Clementine Duval; Tea-scented: Archduchesse Thérèse, Bride of Abydos, Madame Roussell, Mirabile, Taglioni; Bourbon: Bouquet de Flore, Comice de Seine-et-Marne, the Glory of Paris, Pierre de Saint Cyr, &c.

Spotted Roses. Berleze, Donna Sol, Duc de Bassano, Duc d'Orléans Ponctuc, La Splendeur, Lavoisier, Nero, Omphale, Rénoncule Ponctue, Superb Marbled.

ROSMARINUS, *Rosemary* (Linn.) Nat. Order, *Labiatæ.* This shrub is supposed to be a native of the South of Europe, and from thence introduced into England by the monks in the dark ages. Like nearly all the vegetation cultivated at that time immense medicinal powers were attributed to it, and associations, more poetic certainly, but founded on those notions, have continued to attach till the present time. It was regarded as infallible in restoring vigour and tone to the nervous system, stimulating and strengthening the whole set, more especially the memory, and hence the poet has derived his type of remembrance and fidelity in the Rosemary. In the present day it retains some estimation in medicine; it is the principal ingredient in the celebrated Hungary water, and is thought beneficial in cases of nervous headaches. There is only one species, *R. officinalis,* which in a wild state is generally found on sea-shores. In gardens we have three varieties: the silver striped, the gold striped, and the broad leaved Rosemarys: they are all erect, rigid-growing plants, preferring a poor gravelly soil, and upon old walls or rockwork they thrive exceedingly well. The variegated kinds are most showy, and all have a strong aromatic perfume. They are readily increased by cuttings taken off either in autumn when just ripe, or in spring before they begin to grow; the lateral shoots of two or three inches in length are to be preferred, which in September strike in the open ground; but in spring a hand-glass is necessary.

RUBUS, *Bramble* (Linn.) Nat. Ord. *Rosaceæ.* The suffruticose portion of this genus contains some very ornamental plants well suited for dense shrubberies, or filling beneath trees where there is plenty of room for the species to assume their natural appearance. A considerable number have what may be called biennial woody stems, which grow to their full size in one season, bear flowers and fruit in the second, and then die: successional stems being annually produced from the roots. Some few others have more enduring branches, but none last beyond a few years; for their preservation it is therefore always necessary to encourage a sufficient number of root-suckers to form the future plant. Perhaps the most ornamental of the family are the double flowering varieties of *R. rosæfolius* and *R. fruticosus.* The first, known as *coronarius,* is rather tender, but succeeds in sheltered places when planted and trained against a south wall, with the additional protection of a mat in severe weather; it has thorny climbing stems, 3—5 pinnate leaves, and usually solitary terminal flowers, which are double and white. To increase the number of flowers, the stems, as they rise from the roots, should be stopped about Midsummer; they subsequently throw out lateral shoots, and when in autumn the old wood is cut away, these may be trained in their places, and will of course produce a greater display of blossoms. The other, *fruticosus plenus,* is seen to the best advantage when treated in the manner of a pillar rose; it should be planted in rich loamy soil, and by training the strongest stems round a strong stake, they produce a number of short lateral branches which flower in the second and subsequent years, and being rather large, very double, and borne in panicles, are very showy. In habit, this plant closely resembles its parent, the common bramble or blackberry of our hedges. *R. occidentalis,* the American raspberry, is a useful plant in shrubberies; it grows about five feet high, the erect stems being well clothed with ample bright green foliage; its flowers are white, and there is also a garden variety with rose-coloured flowers. *R. pauciflorus,* the Nepal raspberry, is another species of like habit, but stronger in growth; it has upright stems running seven or eight feet in height, with large pinnate leaves, and from near the top of the preceding year's shoots, issues a number of short branches, each bearing a cymose panicle of large red flowers. This species is by some considered tender, though when planted in tolerable good ground among other trees and shrubs, it will be found to spread and establish itself beyond any fear of destruction; the fruit of both the preceding species is eatable, and that of the latter is very agreeable.

The remainder of the genus possessing sufficient interest to be admitted to the garden as ornamental shrubs are—*affinis,* white, a trailer; *Asper,* white, a shrub; *biflorus,* white, shrub; *cæsins fol. variegatus,* white, trailer; *Canadensis,* white, trailer; *Eglanteria,* white, shrub; *horridus,* white, trailer; *laciniatus,* pink, trailer; *Nutkanus,* white, shrub; *rubricaulis,* white, trailer; *spectabilis,* dark red, shrub; *Sprengelii,* pink, trailer; and *ulmifolius,* white, trailer.

RUSCUS, *Butcher's Broom* (LINN.) Nat. Order, *Liliaceæ.* Very pretty evergreen under shrubs, which, providing they are planted in tolerably deep soil, succeed beneath and even in the drip of large trees. *R. aculeatus,* the most common, has large roots which strike far into the ground, and extending around throw up stems, which grow about a foot and a half high, they are suffruticose and dark green, and are furnished with rigid, sharp-pointed leaves. From the middle of the upper side of the leaf, comes out a solitary flower on a very short stalk, the females are succeeded by rather large red berries, each containing two orange-coloured seeds. There are two varieties of this species: *laxus,* rather taller in its growth, and *rotundifolius,* having leaves less pointed than its parent. *R. hypophillum* is distinguished by having larger and broader leaves than the preceding, and also by the flowers issuing from the under instead of the upper side of the leaf: in this species they are succeeded by red berries, about the size of those of the juniper. In *R. hypoglossum,* the flowers are produced on the upper side, but under a second leaflet. In *R. androgyneus,* a climbing species, they are borne on both edges of the foliage, and in the only other species, *R. racemosus,* they are seen in a distinct terminal raceme; the last has smaller leaves than either of the other kinds; it is a very elegant shrub, and is sometimes referred to as the plant of which the Romans composed their crowns of honour. All the species delight in deep loamy soil, where they soon establish themselves without regard to situation or aspect, and for the fronts of shrubbery borders are particularly valuable, on account of their compact, dwarf, and evergreen habit. They are usually increased by suckers from the spreading roots, or if desired to increase fast, cuttings of the roots may be employed, which in two years form plants large enough for removing.

RUTA, *Rue* (LINN.) Nat. Order, *Rutaceæ.* These plants are sometimes grown as under-shrubs, and, as they thrive in any place that has a light and tolerably rich soil, are occasionally useful. The leaves have an unpleasant smell and nauseous taste, but their glaucous colour sometimes renders them desirable in grouping. In poetry, this is the herb of grace, and formerly it was in esteem as a medicinal plant; it is now, however, but little used; its properties are stimulant and antispasmodic, and for the first is in request among the keepers of poultry. There are eight or nine species, the most ornamental of which are *albiflora* and *graveolens,* the last is the common rue. All are easily increased by cuttings taken off in summer, and struck under a hand-light on a warm border.

SALICORNIA, *Glasswort* (LINN.) Nat. Ord., *Chenopodiaceæ.* The species of *Salicornia* are singular-looking seashore plants, abounding on the shores of the Mediterranean, where they are cut and burned for the soda they contain; their naked-looking, jointed branches appear to be destitute of leaves, which, however, are present, but sheath the stem so closely as to be almost unseen. Two species are occasionally introduced to the shrubbery: *S. fruticosa,* a shrubby plant of straggling habit and most uncouth appearance; and *S. radicans,* a trailer: they are increased by division, and are found to grow best when the surface of the soil is sprinkled with salt.

SALISBURIA, *Maiden-hair Tree* (SMITH). Nat. Ord. *Taxaceæ. S. adiantifolia,* the only species, is an extraordinary and interesting hardy tree, attaining a considerable size, and having fan-shaped leaves, resembling in form those of the Adiantum or maiden-hair fern. It is a native of China, but succeeds well in our climate, only requiring a moderately sheltered situation and ordinary soil. The fruit is represented as a pale brown drupe, of a globular form, with a fleshy, white, juicy pulp; the kernel is white, firm, and sweet, with a mixture of bitterness when raw, but agreeable when roasted. It is sold in the Chinese markets, but has never been produced in this country. In the arboretum or as an isolated specimen, the plant is remarkable for its unique appearance, and, whether furnished with branches at the base and trained as a shrub, or allowed to grow erect in the manner of a tree, is equally interesting. Strong loam, lightened with leaf-mould, is perhaps the best soil for it; though, as before remarked, it is not particular in this respect. Propagation is effected by layers, and when grown with a view to increase, the head should be taken out and lateral branches encouraged.

SALIX, *Willow* (LINN.) Nat. Ord. *Salicaceæ.* This is an extensive and botanically difficult genus of trees and shrubs, varying in height from two inches to one hundred feet. According to the usually accepted authorities, there are about two hundred and fifty species; but, from the mere shades of difference admitted as distinguishing marks, and the great changes soil or situation may occasion, it is at least probable that a careful revision would considerably reduce the number; very many of those adopted for species being, in the opinion of acute botanists, only varieties. Their geographical range is, with a few exceptions, limited to the temperate regions of Europe and America; those which exceed this limit are to be included in the Arctic vegetation, for the two species, *S. herbacea* and *arctica,* are found nearer the pole than any other ligneous plants. The first of these is the smallest plant known, possessing the full character of a tree, as it seldom exceeds two or three inches in stature. Willows are distinguished by their simple, undivided leaves, generally alternating on the branches, and their catkins, displayed at an early part of the year. The sexes are usually distinct, the male florets being produced on other plants than those which bear fertile ones. Very few species have any claim to an ornamental character, but most of them are of great utility. Among the several uses to which willows are applied, perhaps the most important is that of basket-making; and next in consequence is the comparatively recent application of the bark to tanning purposes. Nearly all the kinds contain tannin, some to a greater extent than others; but, on an average of species, the willow may be reckoned at something more than half the value of oak for this purpose. The leaves also have their use: in France, Lapland, Sweden, and Norway they are employed as food for horses. The timber is light, tough, and durable; the larger portions are esteemed for boat-building, the paddles of steam-boats, floats of water-wheels, and other works subject to the action of water. The turner, clog, and cricketbat maker also use it to a great extent; bonnets are made from the chips of some species, as also are crayons, charcoal for gunpowder, and dyes for leather are extracted from the bark. In addition to which, a substance, called salicine, is obtained by maceration from the bark of several species, which has been proved to be equally efficacious with Peruvian bark in the cure of agues and other low fevers. This is plentifully produced, and should be a cheap remedy. The employment of willow poles, as supports in the garden, hop-ground, and vineyard, is well known, as also their value in the manufacture of implement handles. The few species which may be considered ornamental, may be thus described:

THOSE WITH PENDULOUS BRANCHES.

Salix Babylonica, the weeping willow,

is decidedly worth most consideration; and, when enjoying the most appropriate situation for it, namely, the margin of a stream or piece of water, is certainly one of the handsomest trees we possess. The notion that Pope's tree at Twickenham was the first of the species grown in England, is erroneous. There is a variety, with dark purplish-brown wood, common in parts of our island, but whether this distinctive mark is permanent, or merely the effect of soil and seasons, is not sufficiently known to render its adoption desirable. Only the female of this species is yet known in England.

Salix annularis, ring-leaved willow, is another pendulous species, more tender than the preceding, as the young shoots are often injured by frosts in severe winters, much sooner and to a greater extent than those of *S. Babylonica.* The Napoleon willow is a weak, pendulous kind, which appears to be distinct from either of the above, and is, in all probability, a variety of *S. purpurea.*

OF ERECT HABIT.

Salix pentandra. This attains a height of twenty feet, has large glossy leaves of a light pleasing green,. The male plants have numerous handsome catkins; the leaves emit an agreeable fragrance, and a copious yellow resin exudes from their margin.

Salix triandra. This species is rather smaller than the last, the leaves are light green, and smooth, and it has very showy catkins.

Salix Caprea. The goat willow; has large, broad, woolly leaves, and particularly showy and fragrant catkins, which furnish the "palm" so much sought about Easter; the plant is naturally of a dwarf scrubby habit, but may be trained to a more ornamental form.

Salix vitellina. Valuable in shrubberies on account of its bright yellow twigs, which harmonise well with those of the Virginian dog-wood, and some species of euonymus. The twigs are among the toughest of the genus, but being small, are seldom grown, except by market-gardeners to bind their produce.

Salix amygdaloides has very large, coarse foliage; its rods are of no value, being brittle, but if left uncut, it becomes a good sized tree, and its large woolly catkins are effective in spring; the cotton produced by the male flowers of this species, has been found a useful adulteration in stuffing cushions, making candle-wicks, &c.

Salix Villarsiana. A beautiful species attaining about five and twenty feet in height, has handsome bright yellow catkins, and narrow, smooth, light green leaves.

OF SPREADING HABIT.

These are chiefly shrubs of diffuse growth, varying in stature from one foot to ten; they may be usefully employed in filling plantations where the ground is naturally wet, and consequently unsuited to more valuable forms.

Coruscans, falcata, myrtilloides, parvifolia, phylicifolia, Pontederana, prunifolia, Stuartiana, sericea, tenuifolia, tetrapla, vacciniifolia.

OF PROSTRATE, OR VERY DWARF HABIT.

These are very low-growing species, their heights ranging between three inches and one foot: in the formation of verdant banks on loamy soil, or for filling the fronts of shrubbery borders in shaded places, they are often useful. Some are also cultivated among alpines, with which such species as *arctica* and *herbacea* group very well.

Adscendens, arbutifolia, arctica, herbacea, humilis, Kitaibeliana, prostrata, retusa, reticulata, serpyllifolia, ulmifolia, uva ursi.

As regards the cultivation of Willows for useful purposes, we believe them, on the whole, to be profitable, and the growth of rods particularly so; the returns are certainly quicker than those derivable from any other woods, and proportioning them with the management and demand, seem at least equal in amount. The ground most suited to the formation of osier beds, as they are called, is found on the margins of streams; it should be of considerable depth, and partake largely of a loamy character, gravelly beds, or banks entirely of an argillaceous nature are not fitting; the land should be sufficiently high to prevent more than an occasional submersion, for, though all willows thrive in damp soils, few of them are naturally bog, or even marsh plants, and never succeed where frequently saturated. The preparation of the ground is confined to a deep summer trenching, to destroy weeds and pulverise it. As it is usual to plant only cuttings, this operation had better be deferred till spring, when pieces of about two feet in length, taken from the bottom of the strongest recently cut rods, may be thrust into the ground for about half their length, at distances of about a yard from each other, their subsequent management through the summer being merely an occasional hoeing to remove weeds; though, at the beginning, it will be well to look over them and replace any that have failed. The produce of the first year will, of course, be small, but the rods must be cut to within three joints or buds of their origin. The most proper time for cutting, is as soon as the leaves have fallen, because the remaining buds have then time to consolidate, and are better prepared to meet the winter; and though for convenience the rods are sometimes allowed to stand all the winter, it may be observed the stools that have been cut over in autumn, always break in the succeeding spring with the greatest vigour. The usual practice is to tie the rods, as soon as cut, into bundles measuring about three feet nine inches in girth, this is called a bolt; and if intended to be peeled, they are stood on end in water; the price varies, in the London markets, from two to three shillings the bundle, while the white or peeled rods fetch from five to seven shillings per bolt; the green rods are generally sold by the score, and the white by the load of eighty bolts. It is only the rods of *S. vimenalis*, which are the largest grown, that are known among basket makers by the term osier, all others are called willows. We will now proceed to mention those which may be most profitably grown for their rods.

Salix vimenalis. This is more extensively grown than any other species; it produces rods from ten to twelve feet long in good soil; the leaves are long, narrow, and silky; the tops of the shoots are always soft and downy, and unless a warm autumn allows them to ripen are useless near the end; the name, *vimenalis* (twiggy), is certainly misapplied, for one of its principal qualifications with the basket-maker is the absence of lateral branches.

Salix triandra. This species is highly esteemed for white rods; they are remarkbly straight, running from six to eight feet in length; in a growing state it has long narrow leaves, and handsome bright yellow catkins. As a tree it is remarkable for casting its bark.

Salix Forbyana. A strong growing species, with flexible rods of eight or nine feet in length. It is generally admitted to be one of the toughest willows grown, but is not at present cultivated to any great extent.

Salix vitellina, is not to be regarded as a very profitable kind, because of the small size of its rods; but for the finer descriptions of wicker work, it is peculiarly suited, because of its clear colour and extreme toughness; its habit of branching is also against its extensive adoption for the markets.

Salix rubra is a very common species, which produces long and strong rods, but their branching habit renders them unsuited for any but the coarser kinds of basket-work. In making hampers and large common baskets, however, the number of twigs is rather an advantage, and it is therefore commonly selected for such; it returns a greater bulk than perhaps any other kind, but from their inferiority the rods realise only a low price.

Salix Smithiana. Is a species but little known, though deserving every attention, as it produces rods of seven to nine feet in length, of the best quality. It may be readily known by the downy appearance of the rods.

Salix purpurea. Like the last, this is a good willow, but seldom grown; its rods average seven feet in length, are straight and tough. It also makes a good hedge if the branches are woven together and kept down.

Those who grow osiers for faggoting underwood should select only those which have long and tough rods, such as *vimenalis, rubra, Forbyana, Lambertiana,* or *purpurea,* are suited for this purpose, and planted in a damp quarter of the wood, occasion little or no trouble. In districts where wet morass lands abound, and the facilities for draining are few, perhaps few things offer a more promising chance of turning it to account than the growth of willows for their timber; so also where river frontage can be secured, a considerable profit may be confidently expected. Perhaps the best mode of management would be in the manner of a plantation of coppice wood; cut over at eight or ten years, they would return an immense quantity of useful stuff, from which timber of a size, to be useful in the arts, might be selected, wood for charcoal, poles, smaller material suitable for crates, hoops, implement handles, and stakes, will also be plentiful, besides what may be made of the bark; and when the lightness of this wood is considered, it is evident the cost of carriage must be decidedly lower than would be incurred for any other kind. Mr. Lowe, on his survey of the county of Nottingham, states the net profit of an acre of willows, treated as plantation trees, to be £214 at eight years old; and at ten something like £300. The kinds best suited to this mode of culture, are such as make the most rapid growth, and are of erect habit: several sorts which are deficient of the required toughness to render them valuable as osiers, are particularly suited to the growth of timber, and among the class, the following may be mentioned as most prominently useful:

Salix Russelliana. This is certainly the very best kind for plantations; it is of erect vigorous growth, reaching in a few years to a height of eighty or ninety feet, with a straight proportionate trunk yielding wood of the best quality, firm, light, and durable; it may be known by its deeply serrated, and quite smooth leaves: the bark is very little inferior to that of the oak for tanning, and from it the salicine already mentioned is most abundantly obtained.

Salix alba. At the same time, of the largest and most useful of willows; it is readily distinguished by its hoary leaves, which are elliptic-lanceolate, acute, serrated, and silky on both sides; it succeeds on drier land than any other species. The average height of the trunk is forty feet, but it has generally a very large girth. Only the female plant of this species has yet been noticed, unless the next is it.

Salix cærulea. Although pronounced a species, there is no perceivable difference between this and the preceding, except that its leaves are a little longer, and have a blueish tinge. It is also remarkable that, while we have only female plants of *S. alba,* there are none but males of *S. cærulea.* This and their similarity in habit, has led to the idea of their being specifically the same. The timber of the present kind is greatly esteemed for turnery and implement-making; hats and bonnets are also manufactured from it; a great quantity is used to make gunpowder, and the bark is nearly equal to that of *S. Russelliana* for tanning; and it is likewise employed as a substitute for cinchona. In France they stain leather for gloves a fine blood-red colour with a preparation obtained from the bark of young trees; and the leaves and young shoots are given to cattle, either green, or dried and preserved in the manner of hay.

Salix fragilis is greatly inferior to either of the foregoing, being of crooked growth and brittle. The wood of the main trunk is, however, esteemed for cabinet-work, for, though short, it has, when seasoned, a beautiful tinge of pink, which is greatly admired and is very pleasing when brought to a good face.

Salix caprea is another comparatively small species, but its wood, being very tough and durable, creates a great demand for it in the manufacture of hurdles and short tool-handles, for which purpose it is superior even to ash. As an underwood, this species is perhaps equal to anything we have, as it succeeds in any soil or situation.

With regard to the planting of willows, nothing can be more easy. They may be increased to almost any extent by cuttings, in the manner before described for osiers. Their after management must of course depend upon the uses they are destined for. The very common mode of pollarding them is objectionable on several accounts; they are then spoiled either for timber or poles; the crowd of small stuff which rises on the head after each cutting suffocates one the other, and the trunk is rendered of little value by its being foreshortened. It must be decidedly more profitable, either to cut them over near the ground, as is practised with stools of ash, chesnut, and other coppice wood, the subsequent shoots to be thinned according to the strength of the stool and the space they are allowed to occupy; or at once to let them run up into perfect trees, taking only such lateral branches as may be required for repairs, &c., before the principal growths have attained a marketable size.

SAMBUCUS, *Elder* (Linn.) Nat. Order, *Caprifoliaceæ.* This genus contains eight species, among which are two herbaceous plants, *Chinensis* and *Ebulus*, the latter an intolerable weed indigenous to this country, whose only use is a supposed power of curing ailments in swine when used as litter for them; four are deciduous shrubs, and the remainder low straggling trees. *S. nigra*, the common black-berried elder, is the best known of the genus; it thrives in all positions, and though sometimes troublesome through its spreading habit, possesses many qualifications to notice; its several uses may be enumerated as below.

As a nurse plant for young plantations: for this purpose it is excellent in most exposed situations, it withstands the sea-breeze, will grow alike vigorous in the salt marsh, on the bleak mountain side, is early in leaf, and is never eaten by cattle. It may also be employed as a hedge plant when other things will not grow, and the hard stubbs offered by the branches when cut back in winter make as secure a fence as many a more expensive article; while in summer it is never injured by browzing, by reason of the bitter taste of the foliage. It is, however, inferior in point of durability, and only to be recommended when more enduring plants fail. The wood is noted for its hardness, a quality recognised from the earliest ages. Pliny says it consists of nothing but skin and bones; and when grown to a useful size it is often used as a substitute for box, in the manufacture of turnery and mathematical instruments; when grown with a view to profit by its wood, it should stand on the hedge-rows of plantations, on tolerably deep moist land, and if trained up to a single stem, occupies but a few years in coming to maturity. It is, however, more frequently grown for its berries than any other purpose, and where these are the principal object the plants should be allowed pretty good soil to grow in; there is usually in most places an out-of-the-way secluded spot that will suit the elder, and in such places, if not too shaded, it generally succeeds the best. It is never by any means desirable to thrust this plant into any prominent position, for it is not a handsome-growing plant, and the odour of its leaves is at all times unpleasant; the flowers are produced in cymes early in spring, and have rather an agreeable scent, but that is overpowered by the foliage; the berries are ripe in September, and are in much esteem for the making of wine. There are several varieties of this elder, the most prominent of which are the white and yellow-striped leaved kinds, and the green fruited, the latter is said to make the best wine. The flowers of the species have considerable medicinal powers, in decoction they are diaphoretic and expectorant: country people introduce them in the preparation of a salve of great healing qualities; they are also used to flavour vinegar, and the French put layers of them between apples, to which they communicate an agreeable fragrance. As the berries are considered poisonous to fowls, the tree should never be planted near poultry yards.

The remainder of the genus are fit occupants of the more remote parts of large shrubberies, their whitish-green flowers serving to enliven such places in early spring, but they should never be approached too closely; they require little or no management after planting, and any of the shrubby kinds may be increased readily by cuttings of the ripened wood, taken off in spring, cut to five or six joints' length, and stuck into moist ground. The root of *S. ebulus* is violently cathartic, the leaves are said to drive away mice, and the berries of this and all the other species dye blue or purple; most of them have a strong narcotic principle, which may be experienced even on approaching them, and hence another reason why they should be kept at a distance.

SANTOLINA, *Lavender Cotton* (Linn.) Nat. Ord. *Compositæ.* A small genus of little suffruticose plants, or under shrubs, for the most part having downy leaves and branches, the former toothed or warted at the edge; the flowers are yellow, freely produced, and as the plants grow in any soil without trouble, are worth a place in shrubbery borders, or among rockwork; they do not exceed a foot and a half, or two feet in height, and are easily propagated by cuttings taken off in autumn, and struck under a hand-glass, or by division of the roots.

SHEPHERDIA (Mittall). N. Ord. *Elæagneæ.* The two species of this genus are both natives of North America, and are closely allied to hippophæ, or sea buckthorn, from which genus they were separated by Nuttale, and named in compliment to the late Mr. W. Shepherd, curator of the Liverpool Botanic Gardens. They are rather low-growing trees, of inelegant rigid habit, remarkable chiefly for their oblong, stellate, hairy leaves, which in *argentea* are quite white, and in *canadensis* brownish-white above, and scaly beneath. They grow best in gravelly soil, or, at least, one that is perfectly well drained, and may be occasionally employed to fill the fronts of considerable masses of trees, being of intermediate stature between them and the shrubs. They are each deciduous.

SOPHORA (R. Brown). Nat. Ord. *Leguminosæ.* Two species, *S. chinensis* and *S. japonica*, are handsome hardy trees, with pinnate leaves, the leaflets rounded, oblong, somewhat acute; the flowers are produced on terminal spikes, rather numerous, and pure white. There are two varieties of *japonica*, called *variegata* and *pendula*, distinguished as their names imply, the one by variegated foliage, and the other by a drooping habit. They are all very ornamental, and well suited for planting singly on lawns; a mixture of peat and loam, or loam and leaf-mould, suits them, and while young it is advisable to shelter the plants from excessive wet or cold, but as they attain a good size, this becomes unnecessary. Propagation is effected by seeds or layers: the first make the best plants when they can be obtained, but the late period at which the trees bloom (August), and the usual wet character of our autumns, render their production in a perfect state very uncertain. On this account nurserymen generally keep dwarf plants, or "stools," as they are termed: the current season's growth of these is laid down with a tongue in October, and they make plants fit for removal by the following autumn; much care, however, is necessary to induce these layers to grow erect, for, like most other lateral growths, their natural disposition to push in a horizontal direction requires much correction; such plants, however, generally bloom at an earlier age than those produced from seed.

SPARTIUM, *Spanish Broom* (Linn.) Nat. Ord. *Leguminosæ.* This genus, as at present constituted, contains but one species, *S. junceum* and its varieties. Formerly our indigenous broom, and several others to the number of twenty, were included in it, these have been distributed between *Cytisus* and *Genista*, and we have now but four plants to treat of under this head; they are *S. junceum*, the true Spanish broom, and its varieties; *acutifolium*, the narrow-leaved broom; *flore pleno*, the double-flowering broom; and *odoratissimum*, the sweet-scented broom. A similarity of habit is observable in all, and each has yellow flowers. The new branches are round and rush-like, the leaves lanceolate, the flowers produced from near the end of the branches, and the entire plant a dwarf-spreading bush. In shrubberies or ornamental plantations this broom is very effective; the number and bright colour of its flowers render it very conspicuous in the blooming season, and at other times the contrast it offers to other shrubs is equally striking. A light sandy soil suits it best, though it does not refuse to grow even in strong loam. It is readily increased by seeds, which should be sown in beds of light earth in March, barely covering the seeds; or cuttings taken in autumn may be struck under a hand-glass.

SPIREA (LINN.) Nat. Ord. *Rosaceæ.* The shrubby portion of this genus contains a considerable number of really handsome objects, well suited for ornamenting the fronts of shrubbery borders; or, taken collectively, a highly interesting group may be formed, which would continue in beauty for three or four consecutive months. We now and then meet with a family of plants so strongly marked with certain peculiarities, that their association with other forms is rendered often difficult, and sometimes impossible, without sacrificing that unity of expression which should always prevail; their form, general appearance, or, possibly, some cultural reason reduces them to an exclusiveness not easily broken through, and we have then to determine between their entire banishment or their adoption as a distinct group. Some such character attaches to the suffruticose portion of the present genus, though the effect of associating them with other shrubs is not so palpably wrong as in other instances; they may be mingled with low and spare-growing forms, but in the company of dense evergreens are completely overpowered and lost, nor is a correct estimate of their beauty ever formed till they are seen in a detached position; collected together in a separate bed, or at a projection of a continuous line of shrubs, their peculiar light and pleasing growth, together with the copiously-produced elegant flowers, is most effective. In the majority of gardens, this mode of planting in groups is overlooked, though calculated to impart a greatly-increased interest, and we have, therefore, thought it advisable to notice the method in connexion with the present subject; the several beauties of the various classes to which the rule is applicable are thus brought more prominently out, a bold and varied character is given to the locality, while cultural operations are rendered less troublesome, and may be carried on in their respective seasons without interference among other classes then in a quiescent state.

The mention of such things as azaleas, berberis, rhododendrons, roses, spireas, &c., will bring to the mind of the intelligent observer, their meagre effect when scattered through a miscellaneous collection of shrubs, and the decided superiority of their appearance in groups. It must, however, be borne in mind, that deciduous plants like the present genus require to be backed with more permanent objects, or a displeasing vacuity will exist in winter; stationed in front of evergreens, however, the proximity of deeper tints serves to heighten the tender green of their foliage in summer, and in winter the void created by the fall of the leaf, and the necessary pruning of the branches, is rendered less observable.

All the spireas delight in rich friable loam, and require an open situation; the shrubby kinds vary in height from two to five feet; they mostly form radical shoots, which are the entire height of the plant in the first season, and blossom in the next, after which they may be cut down; their leaves are generally lanceolate, varying in width from linear to broadly ovate; a few have them pinnated, and all are more or less serrated on their margins. The prevailing colour of their flowers is white; pink and red are also found amongst them. They are produced in racemes, panicles, and all the forms of a corymb; the projecting anthers of most species give a light and pretty appearance to the heads, and the deep purple of the anthers imparts a lilac tinge to many of the white flowering kinds. The following enumeration of some of the most striking species may be useful to those desirous of forming a collection:

Alpina. Attains about three feet in

height, and produces its white flowers in July.

Bella. Has bright red flowers, displayed through July and August, on branches not exceeding two feet.

Betulifolia. The birch-leaved spirea has terminal corymbs of pink flowers, produced about a month earlier than those of the preceding, and attains the same height.

Chamædrifolia. Germander-leaved spirea; has corymbs of white flowers, produced through June and July; the plant grows about a foot and a half high. There are several varieties of this species, differing more or less in habit and the shape of the leaves.

Corymbosa. This is one of the most beautiful species; it has oblong, irregularly serrated leaves, and large dense corymbs of white flowers, which are very striking throughout July and August; the plant does not exceed a foot and a half in height.

Cratægifolia. This species is of very neat growth; the hawthorn-like leaves are more copious than in some others; it grows to a height of three feet and also has white flowers borne in terminal compound corymbs at the same time as the preceding.

Crenata. Is esteemed as one of the earliest to flower; it expands its blossoms in April, and they continue for a couple of months; they also are white. The plant grows about two feet high.

Douglassii. A comparatively new species, and certainly the finest of the genus; it has dense, compound, terminal racemes of rosy-lilac flowers, which are copiously produced on all parts of the plant, and continue in beauty from the end of June till August; the height of the plant may be stated as three feet, though it flowers when very small.

Hypericifolia. This is a tall-growing species, suitable for the middle of a group; its flowers are white, and produced at the same time with those of *crenata.* It is commonly known as the Italian May.

Lævigata. A beautiful species, with lanceolate sessile leaves, and compound racemes of red flowers, produced as early as those of the last species, and continuing for near three months; the plant grows about the same height, and would be suitably placed by the side of *hypericifolia.*

Opulifolia. Guelder-rose-leaved, remarkable for its three-lobed ovate leaves, and stalked corymbs of white flowers; the species is one of the most robust in habit, and is common in shrubberies; it attains a height of five or six feet, and blooms in June and July. A variety of this species, called *tomentosa,* has singular hoary leaves which render it desirable among other kinds.

Pubescens. Another new species, resembling the last in habit, but weaker; it has small round umbels of pure white flowers, which are fragrant; the plant grows about two feet high, and being a native of China will require a rather sheltered spot to grow in. The blossoms expand in March.

Salicifolia. This, though a native plant, is well worth cultivation; it is a strong grower, attaining four or five feet, with ample oblong, serrated foliage, and decompound racemes of flowers, which in the original species are white or occasionally flushed with pink. There are also four or five varieties, as *Alpestris,* white; *Carnea,* flesh colour; *grandiflora,* pink; *latifolia* and *paniculata,* both white,—the first distinguished by its larger leaves, and the last by a difference in the inflorescence: they are all worthy a place in the garden.

Sorbifolia. Is one of the most common, and is known by its pinnate leaves, and panicled flowers of a pure white; it grows about four feet, and blossoms in August. A variety of it known as *S. alpina* is of dwarfer habit and has larger flowers.

There is nothing in the culture of Spireas requiring particular notice, except that as the branches proceeding directly from the roots are always the strongest, it is advisable to encourage their production by cutting away the older stems which are past flowering. Propagation is generally easy by means of suckers, or, in their absence, layers may be made of the lowermost branches which strike root freely, or cuttings of the young wood will strike under a handglass. It is quite probable, if we would be at the pains to save the seed, and cultivate seedlings, that most of the species would be found to yield varieties, and possibly some good additions might thus be made to our hardy shrubs.

STACHYS (LINN.) Nat. Ord. *Labiatæ.* There are a few of the members of this genus which possess a sufficiently shrubby character to be admitted in our present catalogue; and though not remarkable for any great brilliancy in their flowers, are worth planting in shrubbery borders for the sake of creating variety; and as they produce spikes of purple or yellow flowers without trouble, may be reckoned among the occasional aids so useful in large plantations.

The species we refer to are *fruticulosa,* purple; *lavandulæfolia* purple; *Palæstina,* purple; *scordioides,* yellow; and *stenophylla,* yellow. The second and last were formerly included in the genus *Sideritis;* they grow in any soil, and beneath trees if not in the immediate drip, and may be readily increased by divisions or cuttings struck under a handglass.

STRANVÆSIA (LINDLEY). Nat. Ord. *Rosaceæ.* The single species which constitutes this genus was brought from Nepal, under the name of *Cratægus glauca.* From that genus, however, it was separated by Dr. Lindley, and named in compliment to the Honorable William Fox Strangways, F.R.S., a learned and indefatigable investigator of the flora of Europe; it is now called *S. glaucescens.* Except in the warmest parts of our island the plant requires protection in winter, or at least should be trained to a south wall, and have a mat nailed over it in severe weather. The handsome and fragrant pure white flowers are produced in June. Propagation is effected by grafting or budding on the common thorn.

STYRAX, *Storax* (LINN.) Nat. Ord. *Ebenaceæ.* This is a limited genus of deciduous shrubs, for the most part of dwarf habit and copious style of flowering. Three are natives of North America, and the fourth of the Levant, where it is still in esteem on account of a fragrant gum collected from it; this tree, *S. officinale,* the largest of the genus, as it reaches a height of twelve feet, has slender branches, ovate leaves and starry white flowers produced in racemes from the sides of the branches, succeeded by roundish trusses containing one or two angular nuts. The gum called storax is extracted from the stem and branches by incision, and was formerly a considerable article of export from Asiatic Turkey; it has an agreeable odour, and slightly pungent aromatic taste, and was much used in medicine, but is now only regarded as an adjunct on account of its fragrance.

The North American species, *grandiflorum, levigatum,* and *pulverulentum,* are pretty dwarf shrubs, not growing more than four feet high, bearing numerous white flowers, and therefore desirable among other shrubs. They grow best in sandy loam, and should have an open airy position; they may be propagated either by layers put down with a tongue in autumn, which form plants fit for removal by the same period in the next year, or, when seeds are ripened, which will happen in warm seasons, they may be sown in a cold frame, and usually make the best specimens.

SYMPHORICARPUS, *St. Peter's Wort* (DILLENIUS). Nat. Ord. *Caprifoliaceæ.* This genus is sometimes called by its syncope *Symphonia;* it contains three species, all useful plants of the deciduous class, well suited for filling the fronts of shrubbery borders, as they grow in any soil, and will bear the drip of trees to an extent beyond most other shrubs. Their flowers are inconspicuous, but being succeeded by clusters of pure white berries, the plants are rendered very ornamental in autumn; from this circumstance they are popularly known as snowberries. The species are *montanus, racemosus,* and *vulgaris;* of the last there is a variety with variegated foliage:—the whole are readily increased by suckers, which they throw up in abundance.

SYRINGA, *Lilac* (LINN.) Nat. Ord. *Oleaceæ.* This popular genus is for the most part derived from the East, and our common name Lilac appears to be an alteration of the Persian, *lilag,* a flower; so also the generic appellation seems to be most properly traced to its name in Barbary, *Sirinx,* though various other and more poetic derivations have been ascribed to it. There are five species, among which is one of recent introduction from the Himalayas; the others are among the most ancient of the inhabitants of our gardens. The common lilac appears to have been cultivated in this country for upwards of two centuries and a half. The reign of Henry VIII is the most accurate date that can be fixed upon; the first notice of the plant on record, occurs in an inventory taken by order of Cromwell, of the contents of the garden attached to the palace of Nonsuch, wherein are mentioned "six lilackes, trees whiche bear no fruit, but only a pleasaunt smell." After an interval of some forty or fifty years, the equally prized Persian lilac was introduced, both species maintaining to the present day the highest character among our spring flowering hardy plants. In 1795 an addition to the genus was made by the introduction of a Chinese plant which some botanists consider a species, and as such insert it by the name of *Chinensis,* enumerating as a variety of it the *rothomagensis;* while others affirm it to be no more than a hybrid, and employ the latter name to distinguish it, and call the variety *saugeana.* To the cultivator, however, they are equally acceptable under either name, for both are handsome plants, the first having purple flowers and readily distinguished by its stiff mottled branches; the latter has reddish blossoms and a habit resembling its parent. It is to be regretted that the best varieties of the common lilac have not more attention given to them, and also that we have so generally relinquished the raising of others; the authenticated varieties already existing include the small white, the large white, double white, blue, red, large red and violet; the reds and blue, however, are pervaded by a lilac tinge, which it is desirable to remove, so as to render their colours decided and brilliant: this can only be done by raising seedlings from them which may possess the true red or blue unmixed with the indefinite shade which spoils the present varieties. An inclination in the wished for direction is sufficiently evident to offer encouragement in the pursuit, and the trouble entailed is so trifling, that we may well be excused the expression of surprise at the apathy which has so long kept from our gardens the beautiful varieties, we believe it not only possible, but highly probable, may thus be obtained; and the more astonishing is this long-continued neglect when we consider the high value that would belong to a bright red or deep blue lilac.

The course to be pursued with such an object is, as before stated, extremely simple; seed is produced plentifully by all the single flowering varieties, and the only point requiring particular attention, is to save it only from such as have the most decided colours; wherever a variety is observed to incline more positively towards the desired shade than is common, there should the seed be obtained, and though the produce of the first sowing is not all that could be wished, it is at least probable some of the plants may indicate a change in the right direction, and from them again we have to raise another progeny. Lilac seed should be sown in March, on beds of light loamy earth, and if the seed is deposited in drills an increased facility both for weeding and thinning the plants will be insured, the rows should be about eighteen inches apart, which will allow the young plants sufficient room for the first two years of their existence, after which they will require to be transplanted to nursery rows, where they may enjoy about a yard square for each plant; no further removal will be necessary till they bloom, which the majority may be expected to do in the fourth year from sowing, and the remainder in the season following; of course, the most remarkable are then to be selected, and more ordinary ones may be transferred to the shrubbery, or, if required, may be potted for forcing; for the latter purpose they form the best plants it is possible to obtain, as they are just then of a suitable size and full of vigour. This branch of their culture is a very interesting one, and from the readiness with which they blossom under artificial treatment, are great favorites with the forcing gardener. The Persian lilac is generally grown for the purpose, because of its dwarfer habit, but its blossoms are comparatively small and always scentless when forced; and therefore seedling plants of the common kind would be decidedly preferable. In September, or as soon as the terminal buds on each shoot are thoroughly matured, the plants should be taken up with a good ball of roots, and potted into rich loamy soil; they should stand in a sheltered part of the garden for a month, to allow the roots an opportunity of re-establishing themselves, when the whole should be taken to a pit or frame where they may be guarded from the severities of the season, but have no artificial heat beyond that arising from the closed lights; if convenience of this kind is not at hand, they may be placed at the back or under the stage of the greenhouse till it is desired to take them to the forcing-house; it is usual to introduce only a few at a time, so as to have a succession of blooming plants, and on their first admission they should be stationed at the coolest part of the house, and for the first week or ten days the watering must be cautiously done, in fact, very little or none will be required, if the earth is moist when they are taken in, till the buds begin to burst; as their progress is then rapid, so must the encouragement be liberal; frequent syringing will assist the development of the foliage, and an occasional application of liquid manure will enable the blossoms to open with proper strength. About six or eight weeks are usually occupied by the plants in the forcing-house before the flowers are fully expanded, and as they last in perfection above a fortnight, the successional pots should be brought in at intervals of the same time.

There are three varieties of the Persian lilac,—*alba*, white; *laciniata*, purple; and *salvifolia*, purple; the last two are distinguished by their serrated leaves. The remaining species are *Josikæa*, introduced from Germany in 1833, having deep blue flowers, and *Emodi*, the Himalayan lilac before mentioned; this was made known to us in 1844: it is dwarf in habit, growing from three to five feet high; the flowers resemble a good deal those of the privet, and have an unpleasant odour; they are produced in April. Lilacs are found to thrive in all kinds of soil, and in nearly every position it is possible to imagine in connexion with a garden; they grow and flower in dry and poor ground that has not sufficient depth or strength to support scarce any other vegetable form, and in the most confined or smoky districts the lilac is still seen gaily arrayed on the return of each spring. Its habit of forming an immense number of small roots near the surface of the earth enables it to live where other plants would fail, and the only effect of extreme drought is to induce an indurated growth rather favorable than otherwise to the production of flowers. Established plants are readily propagated by suckers, which usually spring up in abundance.

TAMARIX, *Tamarisk* (Linn.) Nat. Ord. *Tamaricaceæ.* There are two species of Tamarisk capable of bearing our climate, indeed one of them (*T. gallica*), though commonly called French, is a native of the south coast of England, and the other (*T. Germanica*) was long since obtained from the continent, and has become naturalised. They are both pretty under shrubs, their twiggy branches being clothed with narrow lanceolate leaves, offer a pleasing contrast among other heavier forms; their flesh-coloured flowers, though individually small, are numerously produced on dense spikes, those of the first named proceeding laterally from a little below the termination of the branches, while those of *Germanica* are terminal; the leaves, too, offer another mark of distinction: those of the first are subulate and clasp the stem; on the latter they are somewhat broader and sessile. They are very hardy plants, thriving in almost any position, though preferring an open one; they withstand the sea-breezes, and on that account are sometimes employed as hedge-plants on exposed parts of the coast. The mucilaginous sugary matter, known as manna of Mount Sinai, is the produce of a variety of *T. Gallica*, which is cultivated by the continental growers for the purpose.

Propagation of both species is easily managed, either by layers, or cuttings of the half-ripened wood bedded into the open ground in the early part of autumn, form plants fit for removal in a year.

TAXODIUM, *Deciduous Cypress* (RICHARD). Nat. Order, *Conifera.* The only hardy species, *T. distichum*, is one of the noblest trees of America; it grows abundantly in extensive swamps on the banks of large streams from the Indian river Delaware, to Florida, and on the Mississippi, and is regarded as one of the most valuable timber trees of that continent. With us it attains a considerable stature, and may justly be included in the number of our handsomest ornaments in arboriculture. As an aid in the transition from ordinary trees to the more sombre class of *conifera* it is invaluable, for though preserving the outline of the latter, the changing tints of its deciduous foliage have a happy effect in such a position. As an isolated object on lawns it is also admirable, the tender green of the leaves in spring gradually deepening to a vivid cinnamon in autumn, together with the neat and elegant regularity of the head is extremely pleasing. There are several varieties of the species differing more or less in the position and spread of the branches, but in some instances the variation is so slight as to be scarcely observable; to our taste the most beautiful are *excelsum* and *pendulum*, the latter being especially remarkable for its charming habit.

The deciduous cypress should be planted, if possible, on a slight elevation, so as to assure a complete drainage to its roots, and a position open to the full influence of the sun is also desirable, for though naturally an inhabitant of swamps, and therefore delighting in moisture, it is found in our climate to encourage a late growth, which being overtaken in an immature state by the winter, the points of the branches frequently suffer from frost under such circumstances: a dry and airy position, on the other hand, induces an early ripening, and then there exists a good chance of their escaping the injury. Propagation is effected by seeds sown in a gentle heat, layers put down in spring, or by cuttings of the young shoots which are found to root readily in water, as is practised with some greenhouse plants.

TAXUS, *Yew-tree* (LINN.) Nat. Ord. *Taxaceæ.* The yew is a native of all the northern parts of Europe, and was formerly abundant in England and Ireland; it is still met with occasionally in a wild state, and is common in churchyards. The name taxus seems to be derived from the Greek *toxon*, a bow, the tree being formerly in much request for manufacturing those engines of warfare; or another root of the word has been suggested in *taxis*, arrangement, referring to the regularity with which the leaves are placed upon the branches.

Our name of yew is evidently an alteration of the Celtic *iw*, evergreen, and is abundantly expressive of the deep and enduring verdure which distinguishes this tree, a characteristic which, as Ray observes, induced our ancestors to plant it in burial-places, as a symbol of that immortality which they hoped and expected for the persons there deposited; and hence a custom which still exists in parts of Ireland and Wales of throwing twigs of this and other evergreens into the grave with the corpse. The sombre stateliness of the yew fits it peculiarly to situations of the kind, and its judicious employment in cemeteries and graveyards cannot fail to invest them with that degree of solemnity it is generally desirable they should present in contrast to surrounding scenes.

Associations of this nature, however, go far to exclude the yew from ornamental plantations, and though we would by no means expunge it altogether from such places, yet the feeling is not to be resisted which renders it entirely unsuited for any prominent position therein, or proximity to any much frequented part of the grounds. Still there are situations in which these plants may be made extremely effective, and it does not require any great stretch of the imaginative powers to suppose how immensely the tints of some retiring glade may be deepened by their employment in the background. The introduction for purposes of this kind, instead of offending, may, in the exercise of a sound judgment, be made to contribute greatly to the general effect, and all we have then to guard against is their too prodigal use.

The yew is one of the slowest growing trees we have, and a very little attention to taking the points of the principal shoots off, will keep it in the form of a shrub for an almost indefinite time; treated in this way, it is sometimes of value for filling between the boles of the trees in distant shrubberies, as it will bear the confinement of such a place, and is not affected by the drip. On the other hand, if it is desired to assume the tree form, the greatest care must be taken of the leading shoot, for as in the fir tribe, its loss is not readily repaired.

As a hedge-plant in situations where a perfect screen from sweeping winds is required, the yew would be unrivalled, but for its slow growth; it, however, bears removing very well even when of great age, and this admits of large plants being employed, and thus a good edge may be formed at once. It bears clipping so well, that with attention to its early training, every part may be kept verdant and equally full from bottom to top: this docility under the shears, used to make it a great favorite when sculptured articles of the kind were fashionable. When once established, the yew hedge is more durable than any other, exceeding even masonry in the time it will last. It should be clipped twice a year, in the early part of summer and autumn, and will then remain perfect. The twigs and leaves are said to be poisonous to horses and cows, and therefore access to it must be carefully barred against them. Sheep and goats eat them without injury, but their extremely nauseous taste is sufficient to deter most animals from taking a quantity likely to do them harm, unless much pressed by hunger. Poultry and birds are fond of the berries, and the mucilaginous juice is said to be very fattening. Thrushes devour a great number, and the attempts of a cock turkey to raise his unwieldly body among the branches in furtherance of an epicurean propensity to these berries, is among the most ludicrous examples of a gourmand laying aside his pretensions to dignity for the gratification of appetite. The common yew, *T. baccata*, has several varieties, the most esteemed of which is the Irish yew (*baccata fastigiata*). This is more erect in its growth than the common, has larger and darker leaves, and is so distinct in general appearance as to lead several botanists to adopt it as another species. Besides several of a local character, there are some others, which, by differing greatly from their parent, have become widely extended, among which we may mention the dwarf creeping variety, *procumbens*, the yellow-berried *fructo-luteo*, and *variegata*, a variety with striped leaves. The latter is an extremely useful plant in ornamental shrubberies, as it is quite free from the objectionable heavy appearance of its congeners, and at the same time retains their best qualifications. There are also three other species capable of living in our climate: these are *Harringtonia*, from Penang; *Canadensis*, from North America; and *Makoya*, from Japan, all valuable trees, and yet scarce in our plantations. Yew trees delight in moist, rich soils; they grow best in deep loams or clay, but will live where it is much drier; they are usually raised from seed, or at least the common kinds, which produce it freely. This is gathered in autumn and mixed with sand, to be thrown in a heap in a shed, and, after turning two or three times, the pulp rots, and in spring the stones are sown in light, rich earth, being covered about an inch deep. Part of the plants come up in the same season, and the remainder in that following. The choicer sorts are propagated by cuttings, which may be formed of either one or two years' old wood; the terminal shoots of the branches form the best, and pieces of about six inches in length are to be preferred. These, taken off either in April or August, and bedded rather thickly into a shaded border, form rooted plants in a year. They are usually left undisturbed til two years old, and the removal of those pieces which do not strike generally leaves them plenty of room. They are afterwards planted in nursery rows; but their subsequent progress is so slow, that few besides the commercial grower ever attempt to raise them. The seedlings receive similar treatment; and, in each case, care must be taken not to damage the leading shoots till the plants have attained a couple of feet in height, when, if desired for hedges, they may be topped, and the lateral shoots cut in and trained. September is the best month for removing these trees, whether old or young.

TEUCRIUM, *Germander* (Linn.) Nat. Order, *Labiatæ*. This is a rather extensive genus, of varied character, containing some species which properly belong to the class we are treating of. *T. angustissima*, *brevifolium*, *creticum*, *montanum*, *orientale*, *polium*, and *thymifolium* are hardy shrubs; their flowers are of various shades of red or purple, except those of *montanum*, which are white. The foliage and young branches of most part of the genus has a hoary appearance, from the gray down with which they are covered. The species cannot claim to rank with really ornamental plants, but are admissible for variety's sake. They grow in ordinary soil, and are increased by layers or cuttings.

THUJA, *Arbor vitæ* (Linn.) Nat. Ord. *Coniferæ*. This genus contains some of our most popular evergreens; the common Arbor vitæ (*T. occidentalis*) is present in every garden; nor is there any want of esteem for its yet more specious fellows. The generic term *Thuja*, from *thujon*, a sacrifice, relates to an ancient practice in the East, of burning the wood as an incense in religious ceremonies. So also our popular name, *Arbor vitæ*, seems to have been derived from the same part of the world, though misapplied to this plant. The cypress is there called the tree-of-life, on account of the supposed medicinal properties of its berries, and probably the resemblance between them led to the mistake. *Thuja occidentalis* is a native of North America, and in Upper Canada attains to the size of a large timber tree, and is much esteemed for the lightness and durability of its wood, which is extensively used, both in house carpentry and boat building. It delights in swampy ground, and there forms the largest specimens. With us it seldom reaches beyond the height of a tall shrub or low tree; and, preserving its natural love of moisture, always grows with most vigour where the land is damp and of an alluvial character. A variety of the common Arbor vitæ, with variegated foliage, is a neat and pleasing plant. *T. orientalis*, the Chinese Arbor vitæ, is a more beautiful species, because of its finer leaves and more lively green; and the varieties of it, *stricta* and *tartarica*, are equally to be admired. The finest of the genus, however, is undoubtedly *T. pendula*, which, next the Deodare, is the most graceful of the fir-tribe. The long, slender, pendulous branches, clothed with deep green foliage, and the elegant pyramidal form of the plant, point it out as especially suited for standing singly on grass, or for occupying the most prominent stations in the shrubbery and arboretum. *Australis*, *Nepalensis*, and *plicata* are each to be classed with the most useful of our evergreens; and the last, being a native of Nootka Sound, will be found extremely hardy and well calculated for plantations exposed to the sea air.

Arbor vitæs bear removal extremely well, and may be transplanted till of large size. Their roots are short and fibrous, and, in soil that will hold together, it is quite possible to remove plants of the largest size with a ball so entire, as to ensure a successful result. It may be done any time between April and October, except just in the hottest part of summer, and small plants, carefully taken up, will scarcely feel the change.

Their propagation is generally effected by seeds, which established plants produce plentifully in our climate. These are to be gathered a little before the receptacle bursts, or a considerable loss by the seeds falling out occurs. The cones should be dried in the sun, and afterwards the seed may be preserved till spring. The best time for sowing is

March. A sufficient number of pans are to be filled with light loam, or loam, leaf-mould, and sand in equal quantities; the surface being pressed smooth and firm, the seed is distributed moderately thick over it, and covered with about half an inch of the soil.

A moderate hot-bed should receive them, where, with attention to watering, the young plants will come up in about three or four weeks. They must be continued in the protection of the frame for another similar period, and may then be gradually inured to the open air. They are best in the open air through the summer, though it is necessary to shade them from the full influence of the sun, and also to supply regularly with water as required, or they soon suffer from drought. If they grow rapidly, it may be necessary to transplant them to other pans or boxes, where they may be allowed more space, or a better plan is to pot them separately into three-inch pots, and, if this is done about the end of July, and they are attended with care through the remainder of the season, a considerable growth will be attained. Through the winter it will be necessary to protect them in frames or pits, or, if these cannot be afforded, the pots should be plunged in ashes and hooped over, so as to cover them with mats in severe weather. The same care will be necessary for the first two winters of their existence, even with the common kinds; and for the more tender, as the Chinese and pendulous, it is positively requisite to supply even more, by placing the young plants in a good pit, or the greenhouse, otherwise a considerable loss will be incurred, as, in their infant state, they are speedily injured by cold. In the third season they may be transferred to the open ground, and will not require any further care of the kind. Such as do not produce seed readily may be increased by cuttings, taken in August, and bedded into a warm border, where they can be protected with mats, or a frame in winter. They root sufficiently to be removed by the following autumn.

TILIA, *Lime-Tree* (Linn.) Nat. Ord. *Tiliaceæ*. The lime or linden tree is among the most popular of our arborescent vegetation; its rapid growth, easy management, and the docility with which it becomes reconciled to the most unpromising situations, are qualities which could not fail to recommend it to general favour, and hence it may be observed as the prevailing form in suburban plantations. It is somewhat remarkable, however, that for a long period it failed to attract the attention since so liberally given. Our woods produce several varieties of the common lime spontaneously, and yet it was reserved for modern nurserymen to cultivate them so as to be available for ornamental purposes. In the time of Evelyn, who complains loudly of the practice, it was usual to import the Hungarian species *alba* from Holland and Flanders, while abundance of the more suitable *Europæa* could have been had in our own country for the trouble of propagating. His suggestions, however, awoke attention, and now an abundance of the tree is an essential feature in every nursery where such things are grown at all. In large plantations, the pleasing bright green of the foliage affords an agreeable relief to the more sombre tints of the majority of their neighbours, and the softened light which falls through the leaves, is most grateful in the sultry heats of summer; in smaller places they are equally appropriate, with the single exception that they should not be placed very near the dressed portion of the garden on account of the continued litter of falling leaves in the end of summer and autumn; and in addition to their other qualifications, we must not omit mention of the facility with which they may be trained to form a blind or screen even in the most confined places. A very common objection justly raised to the ordinary mode of arranging suburban residences, is that through it the privacy and retirement for which they are mainly desired, is completely destroyed, the amateur gardener or his friends cannot move into what would otherwise prove a favorite resort, without feeling that a score of windows (if nothing else) are constantly watching their every movement: and though we may repudiate any approach to an anti-social feeling, it will be generally confessed there are times when we could desire to be unobserved, and perhaps never more so than when, unbending from the severe duties of life, recreation is sought among the fairest of inanimate forms,—our flowers; here it is the linden may be made a valuable aid. High walls and fences are decidedly intolerable, especially when bounding a narrow parallelogram, but a row of limes on either side will wear a pleasing aspect, afford a most effectual and agreeable screen both to scorching sun and cutting winds, admitting, at the same time, an uninterrupted current of air, while ill-mannered curiosity receives a check, against which it can neither complain nor revolt. With these trees an impermeable blind may be soon effected of any desired height, without encroaching on the space required for other things, as they may be trained and trimmed flat like a hedge, and the more often they are pruned, the closer and more densely clothed the branches become, and thus in a few years the garden will become as completely isolated as though situated in the most rural district, while its capacity for cultural purposes is scarcely or at all impeded.

As an avenue tree the lime was some years back extensively employed, and a few instances of its noble appearance yet remain, among the most remarkable of which, is the long carriage drive at Cobham Hall, near Rochester; a number of grand specimens are here seen clothed with the richest verdure all the summer, and nearly as green in the winter, by reason of the uncommon quantity of mistletoe which flourishes upon them. This mode of planting having fallen into disuse, the only cases in which we find the lime so stationed in the present day, is along the sides of our modern 'groves' and 'retreats,' as it is now the fashion to call a row of villa residences fronted by a corresponding line of these trees: and certainly the proprietors of such places could not employ more pleasing or legitimate means in the embellishment of their property, or one more likely to be grateful to the occupiers, who for the most escaping from the turmoil of the city, are refreshed beyond description by the bright verdure thus appertaining to their homes, and we could only wish to see the practice yet more extensively carried out, and sufficient care taken of the trees while young to preserve them from the mutilations of wilful mischief but too frequently observable. Employed in this way, the trees should be planted on the outside of the pathway, in preference to the more usual place in the fore-courts of the houses, where they are objectionable on account of interrupting the free passage of light and air to the rooms, and also because if allowed to spread and assume their natural form, they prevent the growth of flowering plants which should occupy these small gardens; while in the situation recommended, no reasonable objection can be urged against them, if care is taken to select such as have tall stems, and to keep them properly pruned in their subsequent growth, so as to preserve the required head-room. Large trees by the side of a road are always objectionable, because of the damage occasioned by drip, and therefore oaks, elms, and similar kinds are unsuitable, as they attain too large a size, but the lime may be cut back without injury, so as to prevent the least mischief.

The timber of the lime-tree is highly esteemed for the finer works of the carver, the musical-instrument maker, the turner, and for lining boards. It makes the best of charcoal, for which purpose it is preferred even to alder, and painters' scriblets are manufactured from it. In a recent state it is soft, light, and close-grained, and when dry becomes harder, but is never subject to the worm. By maceration, the bark separates into thin layers, and those of the soft inside coats are made into mats, and form a considerable article of Russian commerce, from whence most of those used in gardens and for packing are obtained. Ropes are also made of the fibres of the bark, and the inspissated sap procured from living trees affords sugar, but not in quantity sufficient to remunerate the trouble. Bast mats may and have been made in England from native trees, but the difference in the price of labour here and in Russia, enables the latter country to send them to us at a less cost than we could make them for. The flowers are highly odoriferous, and together with a sugary excrescence which forms on the leaves and young wood, is eagerly sought by bees; the honey thus procured is reckoned the finest, and hence the high value of Lithuanian honey, where the tree abounds. The lime tree grows in almost all kinds of soil, though it prefers a deep and rather moist loam; when grown for profit, which it yields largely as charcoal, it should be planted along with elder on the banks of streams, or when the ground is naturally damp, though not inundated, here its progress is most rapid, and a considerable bulk of useful wood results in a few years. For ornamental purposes the soil is of the least consequence, for limes will live and thrive even on a bed of gravel, their growth being in such positions more restricted, as a matter of course, but this is of little consequence generally, as they have always an ample clothing of leaves, and it may happen that the almost imperceptible degree of dwarfing which results, is to be regarded as an advantage rather than otherwise. They are propagated either by layers or from seed: the latter forms the best plants, though the first is the most usual method. The seed should be sown in beds of light loamy soil, taking care to cover very lightly, and for the first two years they only require to be kept clear of weeds. The stools from which layers are obtained, are trees of rather large size, cut down almost to the ground, from the roots of which numerous branches spring up, and these in the autumn are laid with a tongue into the ground around, and by the following autumn, form plants fit for removal, of about the size of two years' old seedlings, with which they are afterwards to be associated. Early in October they are each to be taken up, and after trimming the roots and removing any side shoots that may have been formed, they are planted in nursery rows nine inches apart, and eighteen inches between the rows: here they may be kept a couple of years longer, continuing to remove the lateral growths as they are formed, till the young trees have reached the required height, when they may be allowed to throw out branches to form a head; this usually happens about the expiration of the period last mentioned, and to afford them room, they should again be transplanted, allowing them double the space previously occupied; and after a further growth of two years, with the same attention to the removal of irregular shoots and proper training of the stem to ensure a straight and clear trunk, they will be fit for final planting, which should be done in October if possible, or if not then, early in March. At each transplanting the roots may be closely pruned in, taking off the points of even the small ones, and, at the last remove, the branches also must be well shortened; the stem has then to be securely fastened to stakes, and as the tree does not form any considerable spread of roots, these supports must be continued for two or three years, or there will be danger of their being blown down.

The usually received number of species is three:—They are *alba*, or, as it was originally called, *argentea*, a native of Hungary, whence it was introduced in 1767; this is readily distinguished by the snow-white colour of the under-side of its leaves. The second species is *Americana*, or *Canadensis* as previously named; and of this there are four varieties which were formerly considered distinct species: they are *heterophylla*, with ovate downy leaves; *laxiflora*, with long flower stalks; *pubescens*, having subcordate leaves, truncate at the base, and downy beneath; *pub. leptophylla*, a subvariety, with very thin leaves, having a few deeply-indented serratures: all of these are natives of North America, and the last two are the smallest of the genus, as they do not attain more than twenty feet in height. The third species is *Europæa*, an indigenous tree, common in the woods of the midland counties, of which there are as many as seven varieties, all natives of Britain, and for the most part of spontaneous production; the first *aurea* is distinguished by the brighter yellow of its flowers than is observable in any other member of the genus; *dasystyla* resembles the last, but the eye of the botanist detects a sufficient difference in its hairy style; *laciniata* is one of the most distinct, on account of the deep yet fine serratures of its foliage; *microphylla* is an inferior kind, with small sub-cordate leaves, and a meagre appearance; *platyphylla*, on the contrary, is one of the most noble,—its leaves are large, cordate, finely serrated, and a little downy beneath; a sub-variety of it, called *plat. aurea*, is also a noble tree; both of them attain in favorable circumstances a height of sixty feet; the only other variety is *rubra*, known by its hairy petioles and the unequal bases of its foliage.

ULEX, *Furze* (LINN.) Nat. Ord. *Leguminosæ*. Of this well-known genus there are four species cultivated in our gardens, or growing wild on dry heaths or sandy commons in various parts of Great Britain. The common furze, *U. Europæa*, is found in abundance wherever the soil is sufficiently light and dry; the waste lands throughout the south and western counties are usually covered with it, but though capable of bearing the sea air in ordinary seasons, a severe frost kills it to the ground. It is much esteemed in the northern parts of Europe as a greenhouse plant, and at St. Petersburgh it is yet among their choicest plants; for, though so common with us, it is almost confined to our own country and those immediately adjoining. In many parts of Russia, Germany, Denmark, and Poland, it is unknown, except as a cultivated plant, and Linnæus lamented that he could hardly preserve it alive in a greenhouse. The celebrated German botanist, Dillenius, is said to have been in a perfect ecstacy when he saw it for the first time displaying its brilliant blossoms on our commons.

A variety with double flowers, obtained in Devonshire some years ago, is now generally grown in gardens to the exclusion of the original kind; and where the soil is of a gravelly nature, or so dry as to permit the full development of the plant, very few things exceed it in beauty; as an accompaniment to rockwork: or wherever an uncontrolled natural aspect is desirable, a group of this furze is one of the most effective features that can be introduced; it does not succeed in damp soils or under trees, and therefore when the position is not naturally suited, assistance must be rendered by throwing up a mound of the lightest earth procurable, intermixed with broken bricks or stones to secure the required drainage. This variety is increased by cuttings of the young wood, taken off in autumn, and after removing a portion of the lower leaves, the cuttings are struck under a hand-glass in sandy earth on a warm border.

The common furze is sometimes employed as a hedge-plant, and in situations so dry and on steep banks where the more usual hedges fail, it will be found highly valuable; it does not answer the desired purpose if treated in the usual way upon level ground, in consequence of its liability to become naked at the bottom, but in the case of a bank, having a base ten or twelve feet wide, the furze may be sowed over it, and will form an impenetrable fence in a few years. In such a position the plants should be topped with a hedging hook early in each spring, and afterwards allowed to flower and ripen their seed, which falling on the soil will spring up, and thus keep the surface of the bank filled with young plants. As a cover for game, the common furze is much esteemed, and being of quicker growth than heather is often sown on poor lands for that purpose. But the most profitable use of furze is as green food for cattle; it has been proved by many agriculturists to be highly useful in this way, and is recommended to be grown where any part of the farm is of so poor a nature as to yield no returns under other crops. The seed is sown on slightly tilled land, and allowed to grow three or four years; about half the plant is then cut off, and bruised between heavy rollers, which operation crushes the woody parts and thorns; it may then be cut along with chaff, or given by itself, alternating with dryer food; in this way it is very nutritious to horses and kine. Its common use as fuel is well known in country places, and where it is common, the poor people generally cut it over in winter and store it for that purpose.

U. nana, the dwarf furze, resembles the common in general appearance, but is smaller in all its parts, and on this account has been thought to be the best for agricultural purposes, inasmuch as the amount of trouble in bruising will be lessened by its employment. Another species, *U. stricta,* or Irish whin, is, on the contrary, a very strong-growing bush, more erect in habit, and having larger leaves and flowers; this, and the double-flowering variety of *U. Europæa,* are the most esteemed as garden plants. Like the preceding kinds, it requires a well-drained soil, but it may be of a richer nature than is good for the others; the mode of propagating this and all the single flowering kinds is by seed, which is usually produced in abundance, and need only be sown either in autumn or spring, in shallow drills on light land.

The only other species is *U. provincialis,* obtained about five and twenty years ago from the south of Europe; it does not differ to any noticeable extent from the preceding, and may be treated in the same manner.

ULMUS, *Elm* (Linn.) Nat. Order, *Ulmaceæ.* Ulm or elm is the Saxon name of this genus, and with very slight variations it is so called in nearly all Celtic dialects. Modern botanists enumerate twelve or thirteen species, but they are so nearly related, and withal rather variable in their characteristics that no little confusion is observable among the several accounts given of the genus. Linnæus expressed an opinion that all the elms of Europe might be classed as one species, and considering their natural inclination to vary in form, as frequently seen among seedlings, the opinion becomes strongly verified; the repeated production of young trees from seed having resulted in numerous varieties of all the more common forms. *U. campestris* and *glabra* are most commonly grown, and are met with more or less abundantly throughout Europe; the former is also found in Palestine whence Dr. Walker conjectures it was originally brought by the Crusaders. *Campestris* is the common English elm, and for general utility is nearly or quite equal to any tree we possess. *Glabra* is distinguished as the smooth-barked elm, and though of smaller growth than the other, forms very excellent timber, which usually realizes a higher price. These two species, with *U. montana,* the wych elm, are the most frequent features in English scenery. The common elm is a tall and elegant tree, which, if it has not the contorted ramifications of the oak, is never chargeable with the round-headed lumpishness but too frequently seen among the latter; it attains a height of sixty to eighty feet, with an irregular outline, densely clothed with clustering foliage, the most prominent being of a bright and glistening green, while more retired portions deepen in colour till the interior recesses seem almost black; these examples of light and shade are so strong and pleasing that it is no wonder we find the tree so frequently employed in ornamental planting. There are upwards of twenty varieties of this tree, and new forms continue still to arise; perhaps the most striking among them are such as *variegatis, latifolia, planifolia, tortuosa,* and *viminalis;* the first with striped leaves, the second on account of its large foliage, and *viminalis* for its slender twiggy branches, must ever be remarkable. Of *U. glabra* there are about half the number of varieties, the most striking and distinct of which is unquestionably *pendula,* which, to the attractions of large, handsome, deep-green foliage, adds the uncommon one, in this genus, of a pendent mode of growing: when grafted upon a tall stem of the wych elm, the branches proceed at first in a horizontal direction, and afterwards curve gracefully downwards; its outline is unlike that of any other tree, much more pleasing than that of the weeping ash, more robust and bold than the willow, while the absence of central erect branches perfectly distinguishes it from any of the forms assumed by the pine tribe. The other varieties of *glabra* deserving especial notice, are such as *latifolia*, *major*, *ramulosa*, and *variegata;* the last is sometimes grown as an under shrub, and is very pleasing in such a position. *U. montana*, the wych or Scotch elm, is less frequent in England than either of the preceding, in fact it is seldom planted, owing to the incorrect notion that it assumes a gloomy aspect when arrived at a considerable size; this we imagine to be an error, for the few specimens to be occasionally met with in the neighbourhood of the most ancient seats of nobility, exhibit a venerable grandeur only equalled by that of the oak; its massive trunk, wide-spreading branches, and the depth of its umbrageous shade, render it highly effective wherever space can be allowed for its introduction, as a back to the more brightly coloured kinds previously mentioned. At present its employment is chiefly confined to the raising of stocks on which the scarcer elms are grafted. Of its varieties we prefer *crispa*, *fastigiata*, *major*, *pendula*, and *rugosa;* they are all distinguished by a deeper green than belongs to the common elms, and for the most part have a more vigorous habit and larger foliage. The longevity of this species is quite equal to the oak, and it preserves a verdant appearance till even a later period than that tree. *U. suberosa*, another common species, is of small stature, seldom exceeding eight or ten feet in height, and of few pretensions to an ornamental character; it is usually seen as a hedge-plant, and was formerly much employed for that purpose till the superiority of thorn hedges caused it to fall into disuse; its younger branches are coated with a rugged bark of cork, but the older portions become smooth, and are then like those of the common elm; there are several varieties of this, all belonging to the class of dwarf-spreading trees or bushes, one of them with variegated leaves is occasionally admitted to the shrubbery. The North American species, *Americana*, *alata*, *crispa*, (sub-species,) and *fulva*, are all handsome trees, and of the first, four or five varieties are already known: *alata* possesses a rough cork bark; *crispa* is distinguished by its wavy rough foliage, which is also downy beneath; and *fulva* by its smooth pendent branches. The other species are *alba*, a native of Hungary, attaining the stature of a rather small tree; *carpinifolia* and *effusa*, both natives of Britain; *fruticosa*, a bush of six or eight feet in height from the south of Europe; *integrifolia* from the East Indies, requiring stove treatment with us, and *major*, another British species but seldom seen. In addition to those enumerated, there are two others formerly considered species but reduced as varieties of *campestris:* one of them called *parvifolia*, a native of Siberia, is a remarkable straggling bush, growing only a few feet high, and well suited to give a wild appearance to clusters of rock-work; the other is *chinensis*, which, as its name implies, is a native of the Celestial Empire, and with us requires protection in winter. As an instance of the difficulty in determining the species of this genus, it should be mentioned, the former of these two may be found in old catalogues under the specific names of *humilis* and *pumila*, which were first found to be identical, and then its relation to the common elm proved to be so evident as to bring it under the denomination of a variety of that kind. As a timber tree the elm is decidedly more profitable than the oak, as it arrives at a useful size in so much less time, and it must ever enter largely into the composition of artificial landscapes for the same reason; in forty or fifty years the elm will arrive at a full stature, while the oak occupies at least double that time; its timber fetches nearly as great a price, while its durability is but little inferior.

The culture of these trees commences with laying, grafting, or their production from seed. *U. montana* generally produces a plentiful supply of seed, and hence its frequent use as stocks for receiving grafts of the finer sorts, for independent of its naturally strong habit, it is well known that seedling trees grow with greater vigour than those resulting from any other mode of propagation. The seed is usually fit for gathering by the middle of June, it is laid to dry in the sun for a few days and then sown; as at this part of the year there is much danger to be apprehended from drought, the ground intended to form the seed-beds should be dug on the same day it is to be sown, choosing a part where the soil is naturally of a light loamy character; it must be broken fine with the spade, the beds marked out, and after just levelling with a coarse rake, the seed is distributed evenly over it; about half an inch of soil taken from the paths is sufficient covering, and when this is again raked smooth, the beds should be covered with mats or boughs of trees, to keep off the drying influence of the sun; it may be necessary when the weather is very hot, to sprinkle the beds with water once or twice a week, but this is better avoided if possible, as it has a tendency to consolidate the surface, and so render it difficult for the young plants to burst through. They will make their appearance above ground in a fortnight or three weeks, and then much care is necessary to preserve them properly moist, and at the same time avoid drawing them up weakly by too much shading. As the summer advances they should be gradually exposed so as to ripen the new parts thoroughly before the arrival of winter, and if any difficulty arises in this respect, or the plants are late, it will be well to afford a protection from cold and frost by laying some fern branches over the beds. The young plants usually stand from fifteen to twenty months in the seedling beds, and are then removed to nursery rows eighteen inches apart and nine inches between the plants: here they stand two or three years and are then fit for final planting, or are again placed in wider rows. The same method is adopted in rearing all the species of which seed can be obtained.

Their production from layers is more commonly followed, because a couple of years are saved in the growth of saleable trees, but the result is not so satisfactory, as there is for a long period an inclination to extend laterally, rather than grow erect, which requires a good deal of care to correct. The stool, or mother plant, is formed by cutting or bending down the stem of good sized trees, and from the base rises a number of strong shoots; these are trimmed of their lower leaves, a tongue cut on the under side, at the part most readily brought in contact with the ground, and with a peg it is fastened securely in the earth, leaving the point of the shoot six or eight inches above the surface. August or September are the best months for performing the operation; and the layer has to remain undisturbed till the return of autumn in the next year, when it is carefully detached and planted in rows along with two year old seedlings; and being treated in the same way, with the additional care of fastening the stem to a stake, to cause it to grow erect, they usually keep pace one with the other; but, in after years, it is observed that the latter exhibits a greater inclination to produce suckers from the roots and a large number of small, spray-like branches, than does the seedling.

Grafting is only applicable in the rearing of ornamental specimens, but for this purpose is perhaps the best, as by it any natural defects may be remedied,—the weak growers are strengthened, the pendent elevated to a height that will admit a display of their character, and the rampant growing kinds reduced to a size suitable for the limited space they are usually destined to occupy; and, in addition, it allows of a rapid increase being made of all that are worthy the little extra trouble. The wych elm is generally selected for stocks, because of its superior vigour and freedom from suckers: those between four and six years of age are the best, as with such there is less trouble in fitting the scion, and the union is found to be quicker than with those of greater age. The end of February or beginning of March is perhaps the best time, which is done in the usual mode of whip grafting, and generally at the top of the stock. The varieties distinguished by a pendent growth must of course be worked in this manner, and, though of less consequence with erect-growing kinds, it is thought to hasten the development of the head, and therefore has become a general practice; the scion should be nearly or quite as large as the stock, and cut so as to fit without a shoulder, so that little subsequent trimming may be necessary, or an unsightly wound will be visible for a very long period. The usual covering of clay or grafting-wax may be applied, but must be removed early, and the ligature loosened, or the rapid swelling of the stock will cause an irregularity about the united parts, that is by all means advisable to avoid. The assistance of a stick to such as are worked on tall stems may be the preservation of a good scion, which, without some stay of the kind, runs a great chance of being blown off; and, indeed, the whole plant should be steadied till danger of the kind is past. Elms of all kinds delight in rather dry, sandy loam, which though light and porous, should not be poor. They make a vast number of rootlets, and speedily drain the earth within their range of every particle of its goodness. Young trees receive much benefit from an annual digging and dressing of manure; but, where they are cultivated in large quantities or have attained a large size, this measure is of course impracticable, and therefore some care should be had in the selection of the ground intended to bear them. They refuse to grow on the summits of bleak hills, and in damp places are short lived and the timber of little value. They may be grown in the smoke of large towns, but their progress is then slow; and in such places no other end can ever be contemplated than that of ornament. Elm trees may be moved till of very large size, though younger plants are ever the most certain; and, as they do not feel the check for so long a time, it is perhaps false economy which recommends the larger ones. When specimens of more than ten years' growth are to be transplanted, the precautionary measure of digging a trench, about a yard from the trunk, and deep enough to cut through all the roots, should be adopted in the preceding year, as a means of securing an abundance of fibres, that may be taken up with the tree; for the principal roots, which are severed in digging this circular trench, will emit a number of fibres into the loosened earth, and thus the specimen will come up with what is technically termed a good ball. In the removal of young trees, the point of the descending caudex, or tap-root, should always be taken off, and the branches must be shortened in proportion to the number and usefulness of the roots. Transplanting is best done in the autumn, as soon as the leaves have fallen; the ground is then dryer and warmer than in spring, and the lacerated roots have all the advantage of the descending sap, which speedily heals their wounds, and the formation of spongioles is scarcely retarded; so that, by the time the returning action of the season excites the tree to a renewal of growth, the roots are again in a condition to meet the usual demand, and all goes on thrivingly. Those which are deferred till spring are, on the contrary, destitute of really useful roots when the power of the sun induces the buds to burst into leaf. An insufficient supply of food is attended with a corresponding puny development in the head; and, at the best, such trees, after entailing a large amount of trouble, do not commence a healthy action till the balance is restored between the branches and the roots, which cannot occur till the autumn has again afforded them an opportunity of regaining their wasted strength. A comparative analysis of the genus, founded on much experience, has shown the *U. glabra* to be the most profitable when cultivated only for timber. This species, though somewhat smaller than the *U. campestris*, is generally erect in its growth, and less inclined to throw out branches; and, as elm timber is usually valued in proportion as it is straight and clear-grained, it follows that a branching habit is by no means desirable. And here we beg to offer a few remarks on the management of these trees when standing in hedge-rows; the common elm is very generally seen in such positions, and, judging from the ordinary appearance of the trees, a person might be led to imagine that nothing but chance could have stationed them as they are seen,—collected in groups of some fifty or sixty together in one part, with scarce room for the swelling trunks to rise, and in another scattered to a distance of hundreds of yards one from another. In general, their first years are passed without the slightest heed being given, and it is only when the lopping is supposed to be large enough to pay for the trouble of cutting it, that any attention is given to the direction of the stem. In nine cases out of ten, by the time indicated, there will have risen several aspirants to the title of main stem; the tree has formed a head at ten or twelve feet from the ground, and this is composed of several branches of nearly equal strength, and all diverging more or less from the perpendicular so much to be desired; and, to reduce the tree to anything like the wished-for form, all but one has to be cut away. Frightful wounds are thus inflicted, which usually leave scars which sink gradually into the very heart-wood; and, when cut up for boards, a dead spot marks the errors of its previous management. Were these trees thinned out to something like regular distances, or transplanted into orderly rows, and, while young enough to be trimmed with a knife, the over strong or unnecessary laterals were taken off, and the leading shoot trained in an upright manner, in a few years they might safely be trusted to go alone, and in the end would yield an immensely greater return in the shape of really good and sound timber.

In advocating early pruning, however, we must not be understood to recommend the severe course sometimes adopted, by which the tree is reduced to a mere pole: for we believe in the possibility of erring equally by either extreme. The intimate connexion universally admitted to exist between the several organs of the plant, forbids the reception of any theory inculcating the idea of benefiting one portion at the expense of another, and as the probability of a non-pruner falling into the opposite error of over-pruning is very great, we may be excused entering more largely into the subject. It would be quite as unreasonable to suppose the accumulation of timber should be increased by reducing the roots, as that it should occur through the removal of the foliage; both are necessary, the one to supply the sap or life-blood of the plant, which may be regarded as the raw material, out of which the wood is to be formed, and the other as the means by which it is elaborated and brought to the required condition; if the proportion of either is disturbed to any great extent, the action of its opposite will at once decline till the level is restored, and thus a serious check to the progress of the tree is sustained, which may require more than one season to recover.

It is one thing to direct the energies of a plant in a certain direction, and another to mutilate it so as to destroy them, yet in the operation of pruning the line of distinction is so obscure as to be easily overstepped, and hence the origin of many failures. All who grow trees for their timber, desire a straight stem, with as little "lop" or branches as is consistent with the habit and health of the individuals; the due proportion must be retained, and no more, or the balk suffers either in size or quality; thick planting induces a straight and clear growth, but it deteriorates the durability and general quality of the timber, and thus we have to depend upon pruning for the production of really sound useful wood. Most timber trees have an inclination in their earlier development to form a great number of lateral branches, and in our opinion the entire amount of ultimate success depends upon the management of these side branches while they are yet young. Supposing the plantation to be formed of three or four year old trees, the laterals should all be pruned at planting, taking off about one third the length of each; this will leave them of a conical form, and allow of an abundance of leaves to keep up a healthy action in the roots. They should be gone over annually in spring, and in subsequent years it will be found the branches nighest the summit of the plant make the largest comparative growth, and by continuing to remove one third of their length, we shall gradually clear the bottom of all branches, while the stopping of those still retained, effectually prevents any rivalry between them and the leader; this last must, of course, be carefully tended, preserving its terminal bud by all means, and securing it in an erect position; the extra attention thus entailed, will necessarily create a greater expense in the early management, but the increased returns in after years must be looked to for repayment. Where the plantation is extensive, there will, in all probability, arise accidents occasionally fatal to the leaders of the most exposed plants; in such cases it is generally advisable to cut them down completely to the ground, and from the shoots which spring from the stool to select the most promising to form the future tree, this has then to be treated as were its neighbours in their infant state.

VACCINIUM, *Whortle-berry* (LINN.) Nat. Ord. *Vaccinaceæ.* This is a rather extensive genus, composed, for the most part, of neat little alpine, or sub-alpine plants, usually deciduous, and ornamented with white or pink flowers, succeeded by edible berries, which in some species are esteemed as a culinary article. *V. Myrtillus,* commonly known as the bilberry, is found on many elevated heaths both in England and Scotland; in May its bright green leaves and red waxy flowers render it very pleasing, and in autumn the leaves assume a darker tint, and its berries become ripe, when they are gathered, to be made into tarts, or eaten with cream. *V. uliginosum,* the bleaberry, is another indigenous fruit-bearing shrub. It is somewhat taller in growth than the bilberry, but inferior in beauty; its fruit is larger, and of less flavour. In France they are used by some vintners to colour their wines red, and an ardent spirit may be drawn from them, which is highly volatile and intoxicating. *V. Pennsylvanicum* is a neat interesting shrub, and produces good-flavoured fruit. *V. vitis Idæa,* the cowberry, is another well-known form; it is of humble growth, rising about nine inches high, and from the circumstance of its being evergreen, and being capable of living within the drip of trees, has been recommended as an edging to shrubbery borders; its fruit is small, red, acid, and bitter, and though unfit for pastry, makes an excellent jelly, far superior to that of the currant, as a sauce for venison, and is very beneficial in colds and sore throats. *V. diffusum,* or *arboreum,* is a tall-growing tree-like plant, and is the only member of the genus which rises above the stature of an under shrub; the remainder are all interesting or beautiful, and, with one or two exceptions, are perfectly hardy. They all succeed best in peat or very sandy loam. Some cultivators assert that they require a damp situation, while others have found them to do in dry places; this apparent contradiction may perhaps be reconciled by the supposition that the individuals spoken of had been derived from situations similar to those they were afterwards grown in, for it is well known they are little affected by cultivation, and retain their natural habits under all circumstances. Seedling plants will be the most apt to accommodate themselves to a change, but only to a certain extent, and therefore it will be well to place them in different positions, till that most suitable is discovered. They are increased by suckers, the trailing-rooted stems, or by seed; the latter should be sown in autumn as soon as it is ripe, in pans of light peaty soil, and so kept till the next spring, when they may be planted out, taking care to preserve a good ball of roots to each plant, and attend them with water as required. Where rhododendrons and American plants succeed, these will generally be found to thrive, and if a rill of water is near, that will undoubtedly afford a good opportunity to cultivate them on its margins, where their appearance will be most pleasing. The genus contains upwards of forty species and varieties, the most desirable of which are those already mentioned, together with such as *buxifolium,* a very curious plant from North America; *corymbosum,* and its variety, *fuscatum; frondosum; venustum,* the blue tangles; *humifusum,* a trailer; *grandiflorum; ligustrinum,* with purple flowers; *Myrcinites,* and its varieties, also purple, and the white-berried variety of *Myrtillus.* Such a collection would be gay from April to June, with their pretty bell-shaped flowers borne on loose racemes, and in most cases standing prominently above the mass of recent bright green foliage.

VESICARIA (LAMARCK). Nat. Ord. *Cruciferæ.* The shrubby portion of this genus contains neat plants of dwarf habit, suitable for ornamenting rockwork, and bearing bright yellow, star-like flowers.

They prefer a dry soil and sunny position. Two of them, *arctica* and *arenosa,* are natives of North America, and very hardy; the other shrubby species, *utriculata,* coming from the Levant, is rather more tender. They are increased by cuttings, or layers, or seeds, which are produced in singularly inflated pods, very remarkable in autumn.

VIBURNUM (Linn.) Nat. Order, *Caprifoliaceæ.* This is an extensive genus, and included in it are some of our most popular shrubs. *V. opulus,* the Gueldres rose, is well known, and, with its varieties, much admired among deciduous shrubs. They all have large, handsome heads of white flowers, resembling those of the hydrangea, produced at an early season, and continuing in beauty for a considerable time. Loudon justly remarks, a very beautiful group may be formed with these, the lilac, laburnum, and scarlet thorn. They attain a height of eight or ten feet, and should therefore be planted in the back ground. Almost any position or soil suits them; nor do they refuse the confinement and impure air of the most confined districts, and, so that they are not immediately beneath the drip of large trees, are available everywhere. The variegated variety and *V. op. sterile,* or Snowball tree, are particularly deserving attention. The most important of the genus, however, is *V. tinus,* or, as it is commonly called, Laurustinus; so universal is the admiration of this species, that it is found in every garden. Its neat, compact habit, and deep green, shining leaves, render it ornamental at all seasons; while, in autumn and winter, its copious heads of white flowers have a very enlivening, cheerful aspect.

It is said to be a native of the south of Europe, and has been cultivated in this country nearly two centuries and a half, in the course of which time several varieties have been originated, differing more or less from the parent in their manner of growth. Many of these have, through inattention, been lost; and some are of so little consequence, as to remain unnoticed. The established and most remarkable are, however, in much request, and such as *lucidum,* on account of its large, dark, and glittering foliage; *strictum,* for its distinct, erect habit; and the subvarieties of each, with variegated leaves, will ever be desirable. *Hirtum* and *virgatum* are also pretty; the first is known by its rugose leaves and stems, and the latter by its dwarf, slender, twiggy growth.

The Laurustinus delights in rich, mellow loam, and is well worth the trouble of selecting proper situations. It is liable to be injured by severe frosts, and should therefore be stationed where it will be screened from the worst weather; and, when very sharp frosts occur, it will be well to take the additional precaution of covering with mats. In dry soils it succeeds admirably as an under-shrub; but where the earth is of an opposite character, the plants should only be placed where they may receive the full influence of sun and air, or a long-jointed, debilitated growth will result, and the production of flowers rendered meagre, or entirely prevented. The pruning of these shrubs should be done in April or May, and those which have grown naked or straggling may be cut completely into the old wood, or even to the ground. They will subsequently break out with extraordinary vigour, and in a year or two become fine specimens. It is essential that the pruning be done at the time mentioned, for, if an earlier season be selected, there is danger of the wounded parts being injured by frosts, and at a later period there is not time left for the new shoots to become matured before the winter, or to form their flower-buds. Propagation is readily effected by layers, which should be put down in autumn, with a tongue; for, though the branches will emit roots, if merely buried in the earth, they are less numerous and more scattered than when the extra trouble of properly preparing them is resorted to. Such layers form plants fit for detaching by the following autumn, and may then be taken off and bedded, or placed in pots. If the former method is taken, the plants should stand about a foot from each other; and, as soon as they are done, the beds should be hooped over, in order to protect them at first from powerful sun-light, and subsequently from frosts and cutting winds. The same precaution will also be necessary with those in pots, which ought to be plunged in coal ashes, and then hooped, to be covered with mats as occasion may require. Three years are generally consumed between the laying and proper growth of the plants, to fit them for final transplanting, and they are then small. Those which remain in the nursery should be removed every second season, which keeps them in a fit state for taking up, by inducing an abundance of fibrous roots. Seed is usually produced plentifully, and is occasionally employed where a large stock is required, but the process is tedious and scarcely worth the trouble, unless new varieties are an object, in which case it should be saved only from the most distinct already existing. It is generally ripe in March, and should be sown at once in pans of light loam, and if the assistance of a gentle hotbed can be afforded, the germination will be quicker. The young plants must be grown in the open air through the summer, carefully tending them with water, and shading them from the fierce sun. They do not generally require to be transplanted till the following spring, when they may be bedded out and treated as recommended for layers.

Of the other species of *Viburnum*, perhaps the most remarkable are, *V. lævigatum*, the Cassiobury bush, an ornamental shrub of eight or ten feet in height, producing pale blue flowers in July and August. It associates well with the Gueldres rose.

V. cassinoides, a dwarf, evergreen shrub, seldom attaining more than three feet in stature, and bearing heads of white flowers, somewhat like those of the Laurustinus.

V. edule is a large deciduous shrub, with white flowers, succeeded by fruit, which, after fermentation, is eatable, and is made into cakes by the North American Indians.

V. oxycoccos, the cranberry-like Viburnum, resembles the last, and its fruit is similarly employed.

V. lantana is a native of Britain, and common on calcareous soils, where it assumes the form of a straggling bush; it is frequent in hedgerows throughout Kent, and is called by the country people cotton-wood. These and the remainder of the genus may be occasionally introduced in large shrubberies; and, as most of them succeed when planted under large trees, they are useful to fill the bottom and create a dense underwood. Birds are fond of the berries of the last-named species, and on this account it is often planted where they are desired to congregate; and, as the young branches form excellent withes, it is also included in coppices to furnish binders for faggoting. Another use, to which it is occasionally placed, is in the manufacture of birdlime, obtained from the bark of young branches. All the species may be propagated by layers and seeds, or cuttings will strike beneath a handglass.

Two species of recent introduction are to be regarded as very fine additions to this genus. They are *macrocephalum* and *plicatum*, both natives of China, where they were discovered and sent home by Mr. Fortune, when collecting plants in that part of the world for the Horticultural Society, in whose Journal they are thus described: "*V. macrocephalum*—a deciduous bush, covered all over with coarse, starry, scurfy hairs. The leaves are about three inches long, very exactly ovate, very blunt, on short stalks, slightly toothed, quite flat, and not unlike those of an apple. The flowers grow in large, compound cymes, which, in the neuter state, are as much as eight inches in diameter, not, however, globose, like those of a Gueldres rose, but rather pyramidal. Each flower is full $1\frac{3}{8}$ inches in diameter, snow-white." Mr. Fortune says, "there is a tree of it in a garden in the island of Chusan, at least twenty feet high, which, in the month of May, every year, is covered with its snow-white blossoms."

V. plicatum. "A handsome deciduous bush, bearing some resemblance to the North American *Viburnum dentatum*. The leaves are broad, coarsely serrate, somewhat plaited, dark green, narrowed to the base, and furnished with an abrupt point (cuspidate). The flowers are white, in round heads, of the size and with the appearance of the Gueldres rose." From their scarcity, they are yet cultivated in pots, and nursed in the winter, though there is little doubt of their proving quite hardy in our climate.

There is also a great probability of these two plants forming a desirable and useful extension of the list of our forcing plants; to which treatment the Gueldres rose, which they resemble, may also be subjected. The last is a truly handsome object in a conservatory through February and March, when well managed, and, providing suitable plants can be procured, they force with a certainty and success at least equal to the lilac. The plants intended for this purpose should be procured from layers of the upper branches of some established specimen, as they have then a more restricted growth, and are more easily induced to flower. They should be constantly grown in pots from the time they are taken from their parent, shifting them into larger pots as required, till a good-sized head is formed and the plant has produced flowers in a natural manner. About three years is generally occupied in thus preparing them, and when properly grown they may be introduced to heat along with roses and lilacs, and treated just in the manner of those plants. To save trouble, recourse is sometimes had to the plants established in the borders, and if they can be had in a flowering state, and small enough to stand in a pot, there is no reason to object to their employment; but usually they are too big, and have always an inclination to make too much wood when in heat; and hence the benefit of preparing them.

VIRGILIA (Lamarck). Nat. Order, *Leguminosæ*. The only hardy species of this genus, *V. lutea*, is a handsome deciduous tree, with pinnate, pale green leaves, and long, pendulous racemes of yellow, pea-shaped flowers. It is of moderate growth, the average height being about fifteen feet, and, from its copious habit of blooming when in a good position, is well suited for planting on lawns or some forward part of the shrubbery quarters. It was introduced from North America upwards of thirty years since, but is still scarce, though infinitely preferable to the genistas and such things as are commonly occupying its place. It may be propagated by layers or seeds; the latter are not always matured, but by the first-named method an abundant stock may be readily obtained from established stools. The young plants are fit for removal in a twelvemonth, and, after a couple of years' nursing, during which time they may be trained to take the form of either trees or shrubs, they may be finally stationed where they are destined to come to maturity. An open situation and well-drained loamy soil suit them best; and in June and July, a well-grown plant is among the most ornamental objects we possess in the garden.

VISCUM, *Mistletoe* (Tournefort). Nat. Order, *Loranthaceæ*. This singular plant is the only true parasite indigenous to this country. Of its perfectly parasitical habits there can be no doubt, as at no time does it receive support from the earth, nor will it continue to exist except on living trees. It was held in much esteem by the Druids, who reverenced it, along with the oak on which it grew, and, among other ceremonies, used to announce the new year's entrance by sending their attendant youths round with branches of the mistletoe. Tradition says, it was then plentiful on the oak, but it is now seldom seen on that tree, though abundant on others in the same neighbourhood. It grows with greater freedom on the lime than any other, and next to it upon the apple. It will also live on the thorn, maple, poplar, and ash, though of constricted habit, and generally upon those trees of short duration. It is also said to be abundant on the *Pinus sylvestris* near Magdeburg.

The still-existing custom of introducing the mistletoe at our Christmas festivities, appears to have descended from the Druidical one before mentioned, and has created so great a demand, as to render the plant scarce where it was some years ago abundant, and it is now turned to a profitable account by some who have large apple orchards. It is not difficult of propagation, though obstinately refusing to grow in any other than its natural position. If the ripe seeds are taken in spring, and inserted in a slit, cut just through the bark of any of the trees previously named, and there secured by a strand of bass, in most cases they will vegetate in the ensuing season. The cleft in the bark must be made completely through, so as to come at the wood beneath, into which the mistletoe insinuates its fibres, and thus lives entirely on the strength of its supporter. It is of slow growth, but on healthy trees will attain a diameter of four or five feet in about ten years. Birdlime is made from the bark and berries macerated, and boiled in water.

VITEX, *Chaste tree* (LINN.) Nat. Order, *Verbenaceæ*. The only hardy species, *V. agnus-castus*, is a shrub of moderate growth, with digitate leaves, five or seven together, and panicled spikes of white, tinged with blue flowers, produced in whorls, the spikes varying in length from five to fifteen inches. It grows in any common soil, but will not bear the drip of other trees. The leaves have a powerful aromatic odour when dried, and the seeds have been celebrated from the time of Dioscorides and Pliny, for securing chastity. Hence both the generic and specific names. They have an aromatic pungency, to which, however, modern writers have ascribed quite an opposite quality. The tree or shrub is worth a place in extensive shrubberies, and may be propagated by cuttings, struck under a handlight, or by layers, put down in spring or autumn. There is a variety called *latifolia*, better worth attention, because of its ample and handsome foliage.

VITIS, *Vine* (LINN.) Nat. Order, *Vitaceæ*. Although but one species and its varieties are usually considered worth cultivating (the well-known grape-vine), the genus contains several others, which, in the present paucity of hardy climbers, may occasionally be worth introducing for the sake of variety and their botanical interest. There are eight or nine species, besides a few varieties, which, though of no value as fruit-bearing plants, yet afford an agreeable shade or cover with only the ordinary attention of the class. *V. riparia* has an agreeable fragrance, and a variegated variety of *V. æstivalis* or *vulpina* is a particularly pleasing object. There are also some American varieties of this species, which produce ripe berries in our climate in July, and, though of too strong a flavour to be of esteem for eating, are sufficiently interesting when covering arbours and such places. *Laciniosa*, also, is worth a place in similar positions; its bright green, deeply cut leaves, resembling those of some parsley, are very remarkable. It also is fragrant, and the small, deep purple berries have a pleasing appearance in autumn. Like the ordinary grape-vine, these delight in rich, loamy earth. They are all readily increased by cuttings of the preceding year's shoots, taken off in spring; and, being cut into lengths of two or more joints, should be struck in a gentle heat. Their subsequent treatment will be confined to an annual pruning, to keep them within bounds, and the necessary attention to training and securing the growing shoots through the summer. The species *carribbæa*, or *indica*, and *cæsia*, will require a sheltered spot to grow in, and should be matted up in winter; but the remainder of the genus, being mostly natives of North America, will bear exposure to the rigours of our climate without suffering injury; and it would be worth the attention of the curious in such matters, to attempt the cross impregnation of some of the earlier fruiting kinds, as the varieties of the fox-grape and others, with some of our superior kinds, in order, if possible, to obtain an early grape of good flavour, which might be cultivated for its fruit in the open air with a superior degree of success than now attends the culture of such as we possess.

WEIGELA (THUNBERG). Nat. Ord. *Caprifoliaceæ*. *W. rosea*, the only introduced species, is one of the finest things of recent importation. It is a native of China, whence it was sent by the Horticultural Society's collector, Mr. Fortune. Joined to a neat yet robust habit, this plant presents attractions equally in its pleasing bright green foliage through the summer, and the very handsome flowers which distinguish it in spring. It delights in porous, friable loam, where it grows with great vigour, and without any particular attention to pruning or training, forms an equal round-headed shrub, and in a few years becomes of considerable size: it is copiously clothed with medium-sized leaves in summer, which fall off in autumn, the plant being deciduous; they reappear in spring among the earliest, and are speedily followed by the specious blossoms, which are in their highest beauty in April; they are campanulate, with a broad-spreading limb of five rounded acute petals, upwards of an inch across, deep rich pink when first expanded, changing to a faint blush in age; they are copiously produced, in clusters of five to seven or eight, from the axils of the leaves, near the summit of the preceding year's shoots; their beauty continues in perfection for three weeks or longer, and then the plant puts on its summer verdure; but before this has proceeded far, it will be well to prune back the branches, in order to keep it bushy, and increase the number and density of flowers in the following season; this pruning need not be severe, but just sufficient to restrain a straggling appearance, to which nearly all caprifoliaceous plants are subject, and it should be done immediately after blooming, or much of the plant's strength will be wasted in the production of useless branches, and the subsequent growth will be too weak to flower well. Increase is easy by means of cuttings or layers; the first should be formed of the earlier shoots, taken off when about three inches long, and placed in a pot of sandy loam, covered with a glass, and plunged in gentle heat; they strike quickly, and if attended through the summer, receiving the necessary repotting, and a regular supply of water form nice little plants fit for the final remove in the following spring: layers may be put down either in spring or autumn, and in a year make considerable progress. The plant will probably be found of much assistance in the production of early spring flowers in the conservatory; it seems impatient of much heat, but a temperature somewhat short of actual forcing will be most likely to bring out its flowers some weeks before the natural season.

XANTHORHIZA (Marsh). Nat. Or. *Ranunculaceæ.* The only known species, *X. apiifolia,* is a singular dwarf shrub, attaining three or four feet in height, and equally remarkable for its foliage and flowers. It has rough ash-coloured stems and branches, the younger ones partially clothed with compound leaves, very deeply and irregularly cut, of an olive green, on rather long footstalks. The flowers are individually small, but are numerously produced on rather large lax panicles; their colour is a singular mixture of purple and green, the latter predominates in the earlier stages of their development, but after a few days they become darker, and for a considerable time are very remarkable, especially if seen among other plants of a brighter tint; the large parsley-like leaves surmounted by what may not inaptly be compared to plumes of lurid purple feathers, offer a contrast too bold to be overlooked. The plant thrives in light loam, and will succeed in a shaded position, though it enjoys pure air quite as much as any other shrub. It is generally propagated by layers, though cuttings of the half-ripened wood strike slowly under a handglass. North America is stated to be its native country, and it has been known in our gardens for a considerable time, but is yet scarce. The roots are of a deep rich yellow colour, a circumstance referred to in the name of the genus; and from the wood both a gum and a resin is obtained, the most remarkable qualities of which are an intense bitter. The introduction of a few such singular and uncommon plants as this, even in gardens of limited extent, is certainly very desirable, as they would impart an interest entirely overlooked in the present monotony of forms, for though of less beauty themselves, their quaint forms or uncommon colours would serve as a counterfoil to their more specious neighbours, and the charm of variety would thus be judiciously extended.

XANTHOXYLUM, *Tooth-ache tree* (Linn.) Nat. Order, *Xanthoxylaceæ.* Three species of *Xanthoxylum* are sufficiently hardy to bear a full exposure to our climate; the most common, *fraxineum,* is a rather tall shrub, with pinnate leaves, of from three to five pairs, and a terminal leaflet, ovate, and slightly serrulate. The flowers are axillary, several together, small, greenish-white, not at all conspicuous. The bark and capsules of this species have a pungent, acrid taste, and have been recommended to alleviate pains in the teeth and gums. The other species are, *mite* and *tricarpum*, both shrubs of moderate growth, also with pinnate leaves, but distinguished from the preceding by having prickly petioles and branches. They are all natives of North America, and have been in our gardens for a lengthened period, though still rarely seen. They are, however, worthy a place in the shrubbery, for the reasons assigned in recommending the previous genus, and we should be much pleased to see nurserymen preparing a more extended choice for their customers in the culture of such genera as, by neglect, are rapidly becoming obsolete. The hardy Xanthoxylums grow with great freedom in a peat soil, though they do not refuse the ordinary earth of gardens, if of tolerable quality, and porous. They resist crowding, but are impatient of drip. Increase is effected by cuttings of the current year's growth, taken in August, and struck in sandy peat and loam under a handglass, the protection of which should be continued them through the succeeding winter.

ZIZIPHORA (LINN.) Nat. Order, *Labiatæ*. Two species of this genus come within the description of hardy under-shrubs. They are small, neatly pretty objects, fitted for ornamenting rockwork or the immediate front of shrubbery borders. One of them, *Z. clinopodiodes*, is an interesting little plant, with the general appearance of a thyme, and small pink flowers, numerously produced. It has two varieties: the first, *canescens*, distinguished by its ciliated, almost hoary leaves; and the second, *media*, by its larger foliage. Both have terminal heads of red flowers, produced freely in the months of July and August, and of sufficient brilliancy to be conspicuous in the position before mentioned. They rise only a few inches from the ground, and, by reason of their natural spreading habit, form dense tufts, which, when well-established, are thickly dotted with blossoms.

The other species referred to (*Z. dasyantha*) is a completely procumbent plant; the stems and leaves are hairy, the first particularly so in a recent state; the flowers are axillary as well as terminal; in the latter state they are produced in dense heads of a bright red colour. All the kinds delight in well-drained, porous soil, preferring a mixture of peat, loam, and sand. Accumulated moisture is often fatal to them, and on this account they are by some deemed tender; but, in a dry situation, they bear with impunity our average seasons, and, in the event of extremely severe weather, are easily preserved by covering them with a layer of light litter. Propagation is easy, both by cuttings and separation of the recent stems already rooted, where they come in contact with the earth. These young plants, however, should be grown in pots till they have attained a good size, lest they suffer from damp.

ZIZIPHUS (TOURNEFORT). Nat. Ord. *Rhamnaceæ*. The hardy species of this genus are for the most part interesting evergreen shrubs, with deep green, shining leaves, and greenish-yellow flowers, which in some instances is followed by edible fruit. *Z. lotus* bears a fruit, pleasant to the palate, sweet, and mealy. The plant is one of the tenderest to be trusted in the open air; it, however, succeeds when grown against a south wall, and in the worst weather may be protected with mats.

Z. flexuosa, *vulgaris*, *spina-Christi*, and its variety *inermis*, are all handsome shrubs of medium habit, each of the species being armed with spines, generally borne in pairs, and have ample glossy leaves. They all grow freely in common garden soil of good quality, and should be included in every collection of evergreens. *Z. incurva* differs from the preceding in assuming the form of a tree, and is deciduous; its large handsome leaves and pretty berries render it very desirable. Propagation is rather tardily effected by cuttings of half-ripened wood struck under hand-lights, or by pieces of the roots treated in the same manner; the latter method is the quickest, and, with care, the young plants grow sufficiently large for transplanting in about two years.

THE END.

COMPANION TO THE DICTIONARIES.

It having been suggested that a Companion to the three Dictionaries just completed, containing selections of the most desirable species in each division, would be of assistance to the purchaser and cultivator of limited means, we make an endeavour to supply the required information. Those marked 1, are suitable for small collections of only the very best; 2 may be admitted to such as are larger; and the remainder should be grown in general collections.

SELECT ORCHIDS.

- Acineta Humboldtii, 1.
- Ærides odoratum major, 1.
  - crispum, 1.
  - affine.
  - quinquevulnerum, 2.
- Aganesia pulchella, 2.
- Angræcum caudatum, 2.
  - bilobum, 1.
- Barkeria spectabilis, 1.
- Brassavola glauca, 2.
- Brassia Wrayæ, or brachiata, 2.
  - Lanceana, 2.
  - Laurenceana, 2.
- Broughtonia sanguinea, 2.
- Calanthe veratrifolia.
  - plantaginea.
- Cattleya Aclandiæ, 1.
  - crispa, 2.
  - citrina, 1.
  - Mossiæ, 1.
  - labiata, 1.
  - Skinnerii, 2.
- Cœlogyne præcox, 1.
  - Wallichii, 2.
- Coryanthes macrantha, 2.
  - Fieldingii, 1.
- Cychnoches Loddigesii.
- Cymbidium eburneum, 2.
- Cypripedium barbatum.
- Cyrtochilum maculatum, 2.
  - Bictoniense, 1.
  - hastatum, 2.
- Dendrobium Dalhousieanum, 2.
  - nobile, 1.
  - fimbriatum, 2.
  - macranthum, 1.
  - Devonianum, 1.
  - Cambridgensis, 1.
  - densiflorum, 1.
  - moniliforme, 2.
- Dendrobium moschatum, 2.
  - aggregatum, 2.
  - secundum, 2.
  - calceolaria.
  - Gibsonii, 2.
  - aureum.
  - Pierardii.
  - pulchellum.
  - formosum, 1.
  - sanguinolentum.
- Epidendrum aurantiacum.
  - aloefolium.
  - bicornutum, 1.
  - Boothianum, 2.
  - cochleatum major, 1.
  - crassifolium, 2.
  - gracile.
  - Hanburii, 1.
  - Harrisoniæ.
  - macrochilum roseum, 1.
  - nutans.
  - odoratissimum.
  - primulinum, 2.
  - patens.
  - Schomburgkii.
  - Skinnerii, 1.
  - Stamfordianum, 1.
  - stenopetalum, 2.
  - vitellinum, 1.
- Gongora maculata.
  - fulva.
  - speciosa.
  - Batemannia.
- Lælia anceps, 1.
  - autumnalis, 2.
  - albida, 2.
  - accuminata, 1.
  - Barkeriana.
  - cinnabarina.
  - majalis, 1.

- Lælia surperbiens, 2.
- Leptotes bicolor, 1.
  - serrulata, 2.
- Lycaste aromatica, 1.
  - cruenta, 2.
  - Skinneri, 1.
- Miltonia candida, 1.
  - Clowesii, 1.
  - spectabilis, 1.
- Odontoglossum citrosmum, 1.
  - Cervantesii, 2.
  - grande, 1.
  - Insleayi, 1.
- Oncidium ampliatum major, 1.
  - Cavendishianum, 1.
  - Cebolletti.
  - Crispum, 1.
  - divaricatum, 2.
  - flexuosum, 1.
  - hians.
  - Harrisoniæ.
  - Lanceana.
  - leuchochilum, 1.
  - luridum—guttatum, 2.
  - longifolium.
  - papilio, 1.
  - pulvinatum, 2.
  - Wentworthianum, 2.
  - Suttonii, 2.
- Oncidium sanguineum.
  - sphacelatum.
- Paphinia cristata, 1.
- Phaius Wallichianus, 2.
  - grandifolius.
- Phalænopsis amabilis, 1.
- Promenæa stapelioides, 1.
  - Rollisonii, 1.
- Saccolabium guttatum, 1.
  - præmorsum, 1.
- Schomburgkia tibicina.
  - crispa.
- Sobralia macrantha, 2.
  - decora, 2.
- Sophronitis grandiflora, 1.
- Stanhopea Devoniana, 2.
  - insignis, 1.
  - oculata, 1.
  - quadricornis.
  - tigrina, 1.
- Trichopilia tortilis, 1.
- Vanda Roxburghii, 1.
  - insignis, 1.
  - teres, 1.
  - cristata, 1.
- Zygopetalum rostratum, 1.
  - crinitum, 2.
  - Mackayi, 2.
  - maxillare.

SELECT STOVE PLANTS.

- Achimenes longiflora, 1.
  - grandiflora, 1.
  - patens, 1.
  - picta.
  - multiflora. 2.
- Æschynanthus Boschianus, 2.
  - pulcher, 1.
  - longiflora. 2.
  - Lobbianum, 1.
  - radicans, 1.
- Allamanda Schottii, 1.
  - cathartica, 1.
- Aphelandra cristata, 1.
- Batatas insignis.
  - bonariensis.
- Bauhinia aurita.
  - acuminata.
  - latifolia.
  - purpurea.
  - glabra.
- Begonia argyrostigma, 1.
  - coccinea, 1,
- Begonia fuchsioides, 1.
  - humilis, 2.
  - albo-coccinea, 1.
  - Martiana, 2.
- Bignonia picta, 1.
  - spectabilis.
  - floribunda.
- Billbergia nudicaulis, 2.
  - pyramidalis, 2.
  - iridifolia, 2.
  - zebrina, 1.
- Catharanthus roseus and varieties, 1.
- Cephalotus follicularis, 2.
- Clerodendrum fallax, 1.
  - infortunatum, 1.
  - Kempfæri, 1.
  - splendens, 1.
- Clitoria ternatea.
- Clivia nobilis, 1.
- Convolvulus pentanthus, 2.
- Crinum amabile.
  - amænum.

Crinum humilis.
Dionœa muscipula.
Dipladenia crassinoda, 1.
Echinocactus (all species).
Echites atropurpurea, 1.
splendens, 1.
Epiphyllum truncatum, 2.
violaceum, 1.
Eranthemum montanum, 1.
bicolor.
Euphorbia splendens, 1.
jacquiniflora. 1.
Eustoma Russellianum, 1.
Gardenia Devoniana, 1.
radicans, 2.
florida-pleno, 1.
Geissomeria longiflora, 2.
Gesnera Cooperi, 1.
Douglassii, 2.
splendens, 1.
Suttonii, 1.
zebrina, 2.
Gloriosa superba, 1.
Gloxinia candida, 1.
cartoni, 1.
Fyffiana, 1.
rubra, 1.
Stanlyi, 1.
Teuchleri, 1.
Hibiscus rosa-sinensis, 2.
splendens.
Inga Harrisii, 2.
pulcherrima, 2.
Ixora coccinea. 1.
crocata, 1.
Griffithii, 2.
grandiflora, 1.
Justicia carnea.
bicolor, 2.
Lantana crocea.
Lantana mutabilis.
Manettia bicolor.
Melastoma sanguineum.
Mamillaria (all species).
Musa Cavendishiana, 2.
Nelumbium speciosum, 2.
Nepenthes ampullacea, 1.
Loddigesii, 1.
Nymphæa cærulea, 2.
rubra, 2.
Passiflora alata.
Kermesina, 1.
Loudonii, 1.
princeps.
Schroderiana, 1.
Pentas carnea, 1.
Phlogacanthus curviflorus.
Pleroma Benthamianum, 1.
Poinciana regia, 2.
Poivrea coccinea, 2.
Rondoletia speciosa, 1.
odorata, 1.
Sinningia guttata, 2.
Stenomesson vitelinum, 1.
Stephanotis floribunda, 1.
Strelitzia humilis, 2.
reginæ, 2.
Streptocarpus Rhexii.
Tabernæmontana laurifolia, 1.
grandiflora, 1.
Thunbergia chrysops, 2.
Hawtayneana, 2.
fragrans, 2.
Tillandsia bracteata, 1.
rosea, 1.
setacea.
tenuifolia, 2.
Torenia asiatica, 1.
Zamia horrida.

SELECT GREENHOUSE PLANTS.

Acacia affinis.
armata, 1.
Lambertiana, 2.
pendula, 1.
pulchella, 1.
verticillata.
Alstræmeria Hookeri, 2.
ligtu, 2.
Niellii, 2.
versicolor and varieties, 2.
Alona cælestis, 2.
Amaryllis—Belladonna, 2.
Amaryllis superbiens, 2.
striata magnifica, 2.
Victoria, 1.
Amphicome arguta, 1.
Anagallis Brewerii, 1.
Phillipsii, 1.
carnea glandiflora, 1.
Aphelexis sesamoides, 2.
humilis, 1.
grandiflora, 1.
Astelma eximia, 1.
fragrans, 2.

- Astelma speciosissima, 1.
- Azalea optima, 1.
  - Broughtonii, 1.
  - Lateritia formosa, 1.
  - exquisita, 1.
  - Fielder's White, 1.
  - variegata, 1.
  - rubra-plena, 1.
  - indica alba.
  - refulgens, 2.
- Banksia pulchella.
  - ericifolia.
  - Solandri.
  - latifolia.
  - grandis,
  - Hugeli.
- Billardiera angustifolia.
  - longiflora.
- Blandfordia nobilis.
  - grandiflora.
- Boronia serrulata, 1.
  - anemonæfolia, 1.
  - vimenea, 2.
  - crenulata, 2.
- Bouvardia triphylla.
  - flava.
- Brugmansia sanguinea.
  - Knightii.
- Burchellia capensis.
- Calceolaria, all vars.
- Callistemon linearis.
  - speciosus.
- Calothamnus clavata.
  - Knightii.
  - gracilis.
- Camellia, all vars.
- Cereus, all vars.
- Canarina campanulata, 2.
- Clianthus puniceus, 2.
- Chironia decussata, 2.
- Chorozema varium, 1.
  - Laurenceanum, 1.
  - ovata, 1.
  - gracilis, 2.
- Cineraria, all vars.
- Cobea scandens.
- Cosmelia rubra, 1.
- Crotalaria purpurea.
- Crowea saligna, 1.
- Cuphea platycentra, 1.
  - miniata, 2.
- Cyclamen, all species.
- Daviesia latifolia, 1.
  - virgata, 2.
- Dillwynia floribunda, 1.
  - cinerascens, 1.
  - speciosa, 1.
  - glaberrima, 2.
  - ericifolia, 2.
  - pungens, 2.
- Diosma capitata.
- Dryandra, all sp.
- Echeveria secunda.
- Epacris grandiflora, 2.
  - miniata, 1.
  - campanulata, 2.
    - rubra, 1.
  - Attleeana, 1.
  - hyacinthina, 1.
  - coccinea, 1.
  - Halleyi, 1.
  - impressa, 2.
    - alba, 2.
- Erica aristata major, 1.
  - Hartnelli, 1.
  - eximia, 2.
  - obbata, 1.
  - jasminioides alba, 2.
  - Massonii, 1.
  - Wilsonii, 1.
  - Cavendishii, 1.
  - gelida, 2.
  - ampullacea, 2.
  - Beaumontiæ, 2.
  - colorans, 2.
  - ferruginea, 2.
  - grandinosa, 1.
  - gemmifera, 1.
  - halicacaba, 1.
  - Irbyana, 2.
  - Jacksonii, 1.
  - Macnabiana, 1.
  - mirabilis, 1.
  - Neillii, 1.
  - nana, 1.
  - Bowieana, 2.
  - Parmentieri rosea, 1.
  - propendens, 2.
  - Shannoniana, 1.
  - Sprengelii, 1.
  - Templeæ, 2.
  - tricolor superba, 1.
  - trossula, 2.
  - vestita alba, 2.
    - coccinea, 1.
    - rosea, 1.
    - lutea, 1.
    - fulgida, 2.

- Erica ventricosa alba, 1.
    - coccinea minor, 1.
    - prægnans, 1.
    - superba, 1.
  - Willmoreana, 1.
- Eriostemon cuspidatum, 1.
  - buxifolium, 1.
- Erodium, all sp.
- Erythrina laurifolia.
  - corallodendron.
- Eutaxia myrtifolia, 2.
- Fuchsia, all vars.
- Gardoquia Hookerii, 2.
- Genista Attleeana, 2.
  - canariense, 2.
  - racemosa, 1.
  - rodophne, 2.
- Gompholobium splendens, 1.
  - polymorphum, 1.
  - versicolor, 1.
- Habranthus, all sp.
- Heliotropium Voltaireanum.
  - "Triomphe de Niege."
- Hippeastrum, all sp.
- Hovea Celsii, 1.
  - Manglesii, 1.
  - linearis, 2.
  - chorozemæfolia, 2.
- Hoya carnosa.
  - bella, 1.
- Indigofera purpurea.
- Ipomæa bona nox.
  - splendens.
- Jasminum nudiflorum, 2.
  - azoricum, 2.
- Kalosanthes coccinea, 1.
  - miniata, 1.
  - odorata, 2.
  - versicolor, 2.
- Kennedya inophylla, 1.
  - Marryattæ, 2.
  - nigricans.
- Labichea bipunctata.
- Lalage hoviæfolia, 1.
- Leschenaultia formosa, 1.
  - biloba nana, 1.
  - arcuata, 2.
  - splendens, 1.
- Leonotis Leonurus, 1.
- Lophospermum scandens.
- Luculia gratissima, 1.
  - Pinciana, 1.
- Maurandia Barclayana.
  - alba.
- Mesembryanthemum, all sp.
- Mirbelia floribunda, 1.
  - Baxteri, 2.
  - dilatata, 2.
  - grandiflora, 1.
- Nierembergia intermedia.
  - filicaulis.
  - calycina.
- Oxylobium pultenæa, 1.
- Passiflora cærulea-racemosa.
- Pavetta caffra, 1.
- Pelargonium, all vars.
- Penstemon Cobæa.
  - Murryanum.
- Petunia, all vars.
- Pharbitis Learii.
- Phænocoma prolifera, 1.
- Pimelea spectabilis, 1.
  - Hendersonii, 1.
  - decussata, 2.
  - incana, 2.
  - linifolia, 2.
- Platylobium ovatum, 2.
  - triangulare, 1.
- Plumbago Larpentiæ, 1.
- Podolobium staurophyllum, 1.
- Polygala cordifolia, 1.
  - Dalmaisiana, 2.
  - oppositifolia, 1.
  - speciosa, 2.
- Pultenæa biloba, 1.
- Salvia, all sp.
- Sarracenia, all sp.
- Scuttellaria ventenatii.
- Siphocampylos betulæfolius.
  - coccineus.
  - bicolor.
- Sollya linearis.
- Sprengelia incarnata, 1.
- Statice arborea.
  - macrophylla, 2.
  - tetragona.
- Stenanthera pinifolia.
- Stylidium ciliatum, 2.
  - pilosum, 2.
- Styphelia tubiflora, 1.
  - triflora, 2.
- Swainsonia galegifolia, 2.
  - coronillæfolia, 2.
- Tacsonia mollissima, 2.
- Tecoma jasmioides.
  - mollis.
- Telopea speciosissima.
- Thunbergia aurantiaca, 1.

- Thunbergia alata alba, 1.
  - Fryerii, 2.
  - Doddsii, 2.
- Triptilion spinosum, 1.
- Tropæolum grandiflorum, 1.
  - brachyceras, 2.
  - Lobbianum, 2.
  - cæruleum, 1.
  - speciosum, 1.
- Vallota purpurea.
- Verbena, all vars.
- Veronica speciosa, 2.
- Witsenia corymbosa, 2.
- Zephyranthes, all sp.
- Zichya molly, 1.
  - glabrata, 2.
  - villosa, 1.

SELECT HARDY PERENNIALS.

- Achillea tomentosa.
  - asplenifolia.
  - clavennæ.
  - coronopifolia.
  - macrophylla.
  - Ptarmica-flore-pleno.
- Acis autumnalis.
  - grandiflora.
  - roseus.
- Aconitum albidum.
  - amænum, 1.
  - australe.
  - biflorum, 1.
  - chinense, 2.
  - decorum.
  - Horkeanum bicolor.
  - gracile.
  - grandiflorum.
  - japonicum.
  - speciosum, 2.
  - variegatum, 1.
    - bicolor, 1.
    - cæruleum.
- Adenophora denticulata.
  - Gmelini.
  - Lamarckiana.
  - reticulata.
  - stylosa.
- Adonis apennina.
  - damarica.
  - siberica.
  - volgensis.
- Agrostemma Bungeana, 1.
  - barba-jovis, 1.
  - pyrenaica, 2.
- Alstræmeria pelegrina, 2.
  - psittacina, 2.
  - Van Hoult's vars. 1.
- Allysum argenteum.
  - Bertolonii.
  - gemonense.
  - Marshallianum.
- Allysum murale.
  - orientale.
  - saxatile, 1.
  - vernale, 1.
- Anchusa angustifolia.
  - Barrelieri, 2.
  - hispida.
  - incarnata, 2.
  - maculata.
  - procera.
- Androsace carnea, 1.
  - chamæjasme, 1.
  - lactea.
  - villosa, 2.
- Anemone alpina, 2.
  - apennina. 2.
  - cernua.
  - coronia, in vars. 1.
  - dichotoma.
  - hortensis, in vars. 1.
  - Hudsoniana, 2.
  - japonica, 1.
  - nemorosa-pleno, 1.
  - palmata-pleno, 2.
  - pennsylvanica.
  - pulsatilla, 1.
  - sibirica.
  - sulphurea.
  - vitifolia, 2.
- Anomatheca cruenta, 1.
- Antholyza Æthiopica, 2.
  - præalta.
- Anthyllis alpina.
  - Dillenii.
  - Gerardi.
  - montana.
  - polycephala.
  - tenuifolia.
  - Webbiana.
- Antirrhinum angustifolium.
  - majus, in vars. 1.
  - meonanthum.

Antirrhinum sempervirens.
Aquilegia atropurpurea, 2.
canadensis, 1.
formosa, 2.
Garneriana, 1.
glandulosa major, 1.
concolor, 2.
hybrida.
leptoceras, 1.
Sibirica.
Skinneri, 1.
vulgaris, in vars. 2.
Arabis alpina.
nana.
bellidifolia, 1.
cærulea.
dasycarpa, 1.
mollis, 2.
petræa.
hispida.
rosea, 2.
stolonifera.
verna, 1.
Argemone grandiflora, 1.
Armeria arenaria.
cephalotes, 1.
dianthoides, 2.
fasciculata.
humilis, 1.
latifolia, 2.
littoralis.
maritima, 2.
plantaginea, 1.
scorzoneræfolia.
Artemisia alpina.
austriaca.
diacunculus.
Marshalliana.
peduncularis.
saxatilis.
tenuifolium.
Asperula aristata.
hirta.
longifolia.
odorata, 1.
tomentosa.
Asphodelus albus, 1.
creticus, 2.
fistulosus.
luteus, 1.
tauricus, 2.
Aster aculeatus.
æstivus, 1.
alpinus.
Aster alpinus flore-pleno, 2.
amellus.
angustifolius, 1.
argenteus.
biflora, 1.
canescens.
ciliatus, 2.
cordifolius.
dumosus.
elegans, 1.
firmus.
foliolosus.
fragilis, 1.
gracilis.
humilis, 2.
lævis, 1.
lanceolatus.
multiflorus.
pulcherrimus.
punctata.
sessiliflorus.
tomentosus.
tortilifolius.
vimineus.
Asterocephalus agrostis.
capillatus, 1.
crenatus, 2.
rupestris, 2.
tomentosus.
elegans, 1.
incarnis.
rutæfolius.
Astragalus aduncus.
asper.
bayonensis.
brachyceras, 1.
canadensis, 1.
dasyglottis.
Donianus, 2.
exscapus.
incanus.
lanigerus.
Laxmannii.
linearifolius, 2.
longiflorus, 2.
monspessulanus.
Nuttallianus.
Pallasii. 1.
stipulatus.
subulatus.
uliginosus.
utrigei.
vimineus, 1.
vulpinus.

- Babiana plicata, 2.
  - rubrocyanea, 1.
  - villosa, 2.
- Babtisia alba.
  - australis.
  - perfoliata.
  - villosa, 1.
- Bellis perennis, 1.
  - hortensis, 1.
  - prolifera, 1.
- Bellium crassifolium, 1.
  - minutum, 1.
- Betonica grandiflora, 2.
  - incana, 1.
  - nivea.
  - stricta.
- Biscutella ambigua.
  - lævigata.
    - alpestris.
  - saxatilis.
- Bobartia aurantiaca, 2.
  - gladiata.
- Bulbocodium vernum, 1.
  - versicolor, 1,
- Butomus umbellatus, 2.
- Calophanes oblongifolia.
- Campanula Allioni.
  - alpina, 1.
  - Barrelieri, 1.
  - calycina, 2.
  - elatine.
  - elegans, 1.
  - glomerata.
    - plena alba, 2.
  - garganica, 1.
  - laciniata.
  - macrantha.
  - nitida, 1.
  - patula.
  - persicifolia, 1.
    - plena, 1.
    - alba, 1.
    - alba-plena, 1.
    - grandis, 1.
  - pyramidalis, 1.
    - alba, 1.
  - pumila, 1.
    - alba, 1.
  - rotundifolia, 2.
    - alba, 2.
  - trachelium, 1.
    - plena, 1.
    - alba, 2.
    - alba plena, 1.
- Centaurea amara.
    - grandiflora.
  - austriaca.
  - Barrelieri.
  - concinna.
  - elata.
  - leucantha.
  - maculosa.
  - montana.
  - polymorpha.
  - romana.
  - splendens.
  - Stæbe.
- Centrocarpa chrysantha.
  - fulgida.
  - grandiflora.
  - subtomentosa.
- Cheiranthus cheiri.
    - all vars. 1.
  - mutabilis.
  - ochroleucus, 1.
- Chelone barbata, 1.
  - glabra, 2.
  - gentianoides, 1.
    - coccinea, 1,
    - alba, 1.
  - Lyoni.
  - nemorosa.
- Chrysanthemum arcticum.
  - graminifolia.
  - mexicanum.
  - sinensis, all vars. 1.
- Colchicum autumnale, 1.
  - album.
  - variegatis, 2.
  - flore pleno, 2.
  - byzantium.
  - montanum, 2.
- Convallaria majalis, 1.
  - flore pleno, 1,
  - rubra, 1.
- Corydalis angustifolia.
  - bulbosa.
  - fabacea.
  - lutea.
  - longiflora.
  - tuberosa.
- Crocus aureus, 1.
  - biflorus, 1.
  - luteus, 1.
  - nudiflorus, 1.
  - Pallasii, 1.
  - vernus, all vars. 1.
  - versicolor, 1.

- Cyclamen coum, 1.
  - europæum, 1.
  - hederefolium, 1.
  - vernum, 1.
- Cyclobothra alba, 2.
  - pulchella, 2.
- Cynoglossum apenninum, 2.
  - bicolor, 2.
  - grandiflorum, 2.
- Delphinium Barlowi, 1.
  - chinense, 2.
  - elatum, 2.
  - elegans pleno, 1.
  - grandiflorum, 2.
  - Iveryana, 1.
  - ochroleucum, 2.
  - Peckhamensis, 1.
- Dianthus alpestris, 1.
  - caryophyllus pleno, 1.
  - fimbriatus, 1.
  - gallicus, 2.
  - gigantea, 2.
  - hortensis, 1.
  - monspessalanus, 2.
  - petræus, 2.
  - plumarius, 1.
  - pulchellus, 1.
  - suaveolens, 1.
- Digitalis laciniata, 2.
  - lutescens, 2.
  - tomentosa, 1.
- Dodecantheon integrifolium, 2.
  - media, 1.
- Erinus alpinus, 1.
  - hispanica, 2.
- Fritillaria imperialis, 2.
  - meleagris, all vars. 1.
  - persica, 2.
- Galanthus nivalis, 1.
  - plicatus, 1.
- Gentiana acaulis, 1.
  - alpina, 1.
  - Burseri, 2.
  - Catesbæa, 1.
  - gelida, 2.
  - purpurea, 2.
    - alba, 1.
  - verna, 1.
- Geum atrosanguineum, 1.
  - coccineum, 2.
- Gladiolus, all sp. 1.
- Gnaphalium albescens, 2.
  - obtusifolium, 1.
  - purpureum, 1.
- Gnaphalium sanguineum, 1.
- Helianthus excelsus, 2.
  - linearis.
  - multiflorus, 2.
    - pleno, 1.
  - speciosus.
- Hepatica acutiloba, 1.
    - alba, 1.
    - plena, 1.
  - Americana, 2.
  - angulosa, 2.
  - triloba, 1.
    - plena, 1.
- Hesperis matrionalis, all vars. 1.
- Hieracium alpestre, 2.
  - aurantiacum, 2.
  - boreale.
  - canescens.
  - glabratum.
  - humile, 2.
  - Lawsoni.
  - pumilum, 2.
  - saxatile, 2.
- Hydrangea hortensis, 1.
  - japonica, 1.
- Iberis corifolia, 2.
  - gibraltarica, 1.
  - saxatilis, 1.
  - Tenoreana, 1.
- Iris, amæna, 1.
  - biflora, 1.
  - chinensis, 1.
  - deflexa, 2.
  - elegans, 2.
  - germanica, 2.
  - humilis, 1.
  - lusitanica, 1.
  - orientalis, 1.
  - Pallasii, 2.
  - persica, 1.
  - siberica, 1.
    - flore alba, 1.
  - sub-biflora, 1.
  - susiana, 1.
  - tenuifolia, 2.
  - xiphium, 2.
  - xiphioides, all vars. 1.
- Ixia, aristata, 2.
  - aulica, 2.
  - capillaris, 2.
  - conica, 1.
  - crateroides, 1.
  - erecta, 2.
  - hybrida, 1.

- Ixia leucantha, 2.
  - maculata, 1.
  - ovata, 2.
  - viridiflora, 1.
- Lathyrus altaicus.
  - grandiflorus, 1.
  - latifolius, 2.
    - albiflorus, 2.
  - roseus, 1.
  - tuberosus.
  - venosus.
- Lilium atrosanguineum, 1.
  - aurantium, 2.
  - bulbiferum, 1.
  - canadense, 1.
  - candidum.
  - carolinianum, 2.
  - chalcedonicum, 2.
  - concolor.
  - eximium, 1.
  - japonicum, 1.
  - Martagon, vars.
  - philadelphicum, 2.
  - speciosum, 2.
    - punctatum, 1.
    - rubrum, 1.
  - thunbergianum, 2.
  - tigrinum, 1.
- Linaria cymbalaria, 2.
  - genistæfolia.
  - marginata.
  - silenifolia, 2.
- Linum alpinum, 2.
  - flavum, 1.
  - grandiflorum, 2.
  - monogynum, 1.
  - perennis, 2.
- Lupinus grandifolius.
  - latifolius, 2.
  - nootkatensis, 2.
  - polyphyllus, 1.
    - albus, 1.
    - atrorubens, 1.
- Lychnis alpina.
  - chalcedonica.
    - alba, 2.
    - a. plena, 1.
    - floræ pleno, 1.
  - coronaria.
    - plena, 1.
    - alba, 1.
  - flos-cuculi, 2.
    - plena, 1.
  - fulgens, 2.
- Lythrum lanceolatum, 2.
  - lineare, 1.
  - myrtifolia.
  - tomentosum, 2.
- Mimulus cardinalis, 2.
  - luteus.
    - Wilsoni, 2.
    - regina, 1.
  - moschatus, 1.
  - variegata, 2.
- Myosotis azoricum, 1.
  - nana.
  - sparsiflora, 2.
- Narcissus ajax, 1.
  - albus plenus, 2.
  - biflorus.
  - bulbocodium, 1.
  - citrinus.
  - jonquilla, 2.
    - plena, 1.
  - minor, 2.
  - moschatus, 2.
  - nobilis, 1.
  - poeticus, 1.
  - papyraceus, 2.
    - jasmineus, 1.
  - Tazetta.
    - grandiplenus, 1.
  - tenuior, 2.
- Nuphar lutea.
  - pumila, 2.
  - sagittæfolia, 2.
- Nymphæa alba, 1.
  - canadensis, 1.
  - odorata, 1.
- Œnothera cæspitosa.
  - Fraseri, 1.
    - variegata, 1.
  - gracilis, 2.
  - macrocarpa, 1.
  - speciosa, 2.
  - taraxacifolia, 1.
- Ornithogalum aureum, 1.
  - biflorum.
  - fimbriatum, 2.
  - gemmiflorum, 2.
  - latifolium.
  - odoratum, 2.
- Pæonia edulis.
  - candida, 2.
  - Humei, 1.
  - Pottsii, 1.
  - Reevesii, 2.
  - Whitleii, 1.

Pæonia officinalis
rosca, 2.
blanda, 1.
Sabini, 1.
rubra, 1.
albicans, 1.
Baxteri, 2.
Moutan, 2.
Banksii, 1.
albida plena, 1.
carnea plena, 1.
Anneslei, 2.
papaveracea, 2.
rosea, 2.
rosea plena, 1.
humea, 1.
punicea, 1.
Reevesiana, 1.
Papaver alpinum.
croceum.
nudicaule.
rubro aurantiaca.
orientale, 2.
Penstemon argutum, 2.
breviflorum.
campanulatum, 2.
Cobœa, 1.
glaberrimum, 2.
gracilis.
grandiflorum, 2.
Mackayanum, 2.
Murryanum, 1.
ovatum, 1.
Scouleri, 2.
Phacca arenaria.
bœtica.
densifolia.
glabra.
lutea.
Phlomis bicolor, 2.
fruticosa.
laciniata, 2.
tuberosa.
Phlox acuminata.
Allcardii, 2.
canadensis, 2.
cordata, 2.
grandiflora, 1.
excelsa, 2.
glaberrima, 2.
gloriosa, 1.
Ingramii, 2.
lœta, 1.
latifolia, 2.
Phlox Lorainii.
Murryana, 1.
omniflora, 1.
ovata, 2.
Listonii, 1.
Paxtonii, 2.
paniculata alba, 2.
procumbens, 1.
pyramidalis.
alba, 2.
corymbosa, 2.
Shepherdii, 1.
speciosa.
subulata, 1.
Van Houtii, 1.
vernoniana, 2.
vestita, 1.
Wheeleriana, 2.
Polygala chamæbuxus, 1.
major.
rubella.
Potentilla alba.
alpestris.
atrosanguinea, 2.
coccinea, 2.
ignescens, 1.
formosa.
Garneriana, 1.
Magana, 1.
Hopwoodiana, 1.
Loddigesii, 1.
Mackayana, 2.
Primula auricula (all vars.), 1.
cortusioides, 1.
denticulata, 1.
elatior.
pleno, 1.
polyantha, 1.
farinosa, 1.
latifolia, 2.
minima, 2.
nivalis, 1.
scotica, 1.
vulgaris (vars.), 2.
Ranunculus asiaticus (all vars.), 1.
bracteatus pleno, 2.
bullatus pleno, 2.
repens pleno.
Salvia azurea.
Barrelieri, 2.
bicolor, 1.
pseudo-coccinea, 1.
triloba.
Saponaria cæspitosa.

- Saponaria ocymoides, 1.
  - officinalis.
  - plena, 2.
- Saxifraga (all sp.), 2.
- Scabiosa australis, 1.
  - pubescens, 2.
  - stricta, 2.
- Scilla amœna, 2.
  - autumnalis, 1.
    - alba, 1.
  - bifolia, 1.
    - alba, 1.
    - rubra, 1.
  - peruviana, 1.
  - siberica, 1.
  - verna, 1.
    - alba, 1.
    - rosea, 1.
- Silene acaulis.
    - alba.
  - Catesbœa, 2.
  - fimbriata.
  - maritima pleno.
  - Shafta, 2.
- Sparaxis grandiflora, 1.
    - liliago, 1.
  - tricolor (all vars.), 1.
- Spirea Filipendula, 2.
    - minor, 1.
    - multiplex, 1.
  - japonica, 1.
- Statice altaica.
  - aurea, 2.
  - bellidifolia, 2.
- Statice echinus, 2.
  - latifolia.
  - nana, 2.
  - viminea, 2.
- Tigridia conchiflora, 1.
  - pavonia, 1.
    - Watkinsonii, 1.
- Trichonema Bulbocodium, 1.
  - cælestinum, 1.
  - cruciatum, 2.
  - ramiflorum, 2.
  - speciosum, 1.
- Tritonia (all sp.), 2.
- Tulipa (all sp.), 1.
- Uvularia flava.
  - grandiflora.
  - puberula.
- Valeriana asarifolia, 2.
  - globulariæfolia, 2.
  - pyrenaica, 2.
  - saxatilis, 2.
- Veronica alpina, 2.
  - chamœdrys, 2.
    - variegata, 1.
  - elegans, 1.
  - gentianoides, 2.
  - longifolia.
    - alba.
  - præcox, 2.
  - tenella.
- Viola (all sp.), 1.
- Wahlenbergia grandiflora, 2.
  - repens.
- Wulfenia carinthiaca, 2.

SELECT HARDY BIENNIALS.

- Asterocephalus atropurpurea, 2.
  - albus, 1.
  - carneus, 1.
  - roseus, 2.
  - variegatus, 1.
- Campanula Adami, 2.
  - armena.
  - bellidifolia, 1.
  - corymbosa, 2.
  - macrostachya, 1.
  - medium, 1.
    - album, 1.
- Coreopsis chysantha, 2.
  - lanceolata.
  - trichosperma, 2.
- Corydalis aurea, 2.
  - stricta, 2.
- Cynoglossum bicolor, 2.
  - cheirifolium.
  - hirsutum.
  - pictum, 2.
- Delphinium pictum, 1.
  - requienii, 2.
- Dianthus aggregatus, 2.
  - barbatus, 1.
  - chinensis, 1.
- Digitalis purpurea, 2.
    - alba, 1.
    - punctata, 1.
- Erythrolæna conspicua.
- Mathiola fenestralis.
  - incana, 1.
    - (all vars.), 1.
  - intermedia, 1.

- Mathiola odoratissima, 1.
  - simplicicaulis.
- Œnothera albicans.
  - bifrons, 2.
  - corymbosa, 2.
  - globularis.
  - incana, 1.
- Œnothera longiflora, 2.
  - odorata, 1.
- Salvia æthiopis.
  - canescens, 2.
  - pinnata, 2.
  - Sclarea.
  - spinosa, 2.

SELECT ANNUALS.

Those marked * are tender.

- Ammobium alatum, 2.
- Argemone grandiflora, 2.
- Bartonia aurea, 2.
- Blumenbachia insignis.
- Calendrinia discolor, 2.
  - grandiflora, 2.
  - speciosa, 1.
- Calliopsis atrosanguinea, 1.
  - Drummondii, 1.
- Callistemma hortensis (all vars.), 1.
  - indica (all vars.), 1.
- Campanula Lorei, 1.
- Clarkia elegans, 2.
    - plena, 2.
  - pulchella, 1.
    - alba, 1.
- Clintonia pulchella, 1.*
- Collinsia bicolor, 1.
- Cosmanthus fimbriatus, 1.*
- Convolvulus tricolor.
- Delphinium ajacis (all vars.), 1.
  - consolida plena, 2.
- Elichrysum macranthum, 2.
  - robustum (vars.), 2.
- Erysimum Peroffskianum, 1.
- Escholtzia compacta, 2.
- Eucharidium concinnum.
- Eutoca viscida, 1.
- Gillia tricolor, 2.
- Goodetia bifrons, 2.
  - Lindleyana, 1.
  - rosea alba, 1.
- Gypsophilla elegans, 2.
- Hibiscus Africanus, 1.
- Ipomœa atropurpurea, 1.
  - rubro cærulea, 1.*
- Kaulfussia ameloides, 2.
- Lathyrus odoratus (all vars.), 1.
- Leptosiphon androsaceus, 2.
  - densiflorus, 1.
- Lobelia gracilis, 1.
- Lupinus bicolor, 2.
  - Hartwegii, 2.
  - mutabilis.
  - Cruikshankii, 1.
  - nanus, 1.
  - pulchellus, 1.
- Mathiola annua (all vars.), 1.
- Malope grandiflora, 2.
- Mesembryanthemum pyropæum, 1.*
  - chrystallinum, 2.*
- Nemophilla atomaria, 1.
  - discoidalis, 2.
  - insignis, 1.
- Nolana atriplicifolia, 1.
- Oxyura chrysanthemoides, 2.
- Phlox Drummondii, 1.*
- Platystemon californicum, 1.
- Portulacca splendens, 1.*
  - Thellusonii, 1.*
- Primula sinensis, 1.*
- Rhodanthe Manglesii.*
- Reseda odorata, 1.
- Salpiglossis (all vars.), 1.*
- Schizanthus Hookeri, 1.*
  - pinnatus (all vars.), 1.
  - retusus, 1.*
- Schyzopetalon Walkeri, 1.
- Sphœnogyne speciosa, 1.
- Viscaria oculata, 1.
- Zinnia elegans (all vars.), 1*.

SELECT FRUIT.

APPLES.

Blenheim pippin.
Cockle do.
Court-pendu plat.
Court of Wick.
Downton.
Early harvest.
Golden Harvey.
knob.
pippin.
Juneating, white.
Kerry pippin.
London do.
Margaret, early red.
Margil.
Nonpareil, golden.
scarlet.
Oslin.
Pearmain, Herefordshire.
Lamb Abbey.
Quarrenden, Devonshire.
Reinette du Canada.
golden.
Ribston pippin.
Russet, Syke house.
Sturmer pippin.

CHERRIES.

Adam's crown.
Bigarreau.
Tardif de Hildesheim.
Black heart.
Carnation.
Elton.
Kentish.
May Duke.
White heart.

CURRANTS.

Dutch red.
Knight's sweet red.
Dutch white.
Naples black.

FIGS.

Brunswick.
Ischia black.
Turkey brown.

GOOSEBERRIES.

Abraham Newland.
Crystal.
Honey, white.
Irish raspberry.
Whitesmith, Woodward's.
Red Champagne
Crown Bob, Milling's.
Beaumont's red.
Roaring Lion, Farrow's.
Warrington, red.
Glenton green.
Greengage, Pilmaston.
Independent, Brigg's.
Jolly Tar, Edwards'.
London.
Walnut, green.
Golden Drop.
Robin Hood, Bell's.
Rumbullion.
Smiling beauty, Beaumont.

GRAPES.

No. 1 are suitable for open walls.

Black July, 1.
Black Prolific, 1.
Black Frontignan, 1.
Grizzly do.
White do., 1.
Hamburgh, black.
Malvasia, 1.
Black Muscadine, 1.
Royal do., 1.
Muscat of Alexandria.
Cannon Hall.
Pitmaston white cluster, 1.
Saint Peters, black.

MELONS.

Cantaloupe, early.
Windsor scarlet flesh.
Yarmouth prize.
Beechwood.
Hooisance.
Sweet Melon of Ispahan.
Fleming's Hybrid Persian.

PEACHES.

Admirable, early.
late, Warburton.
Bellegarde.
George the Fourth.
Grosse Mignonne.
Hemskirk.
Malta.
Noblesse.
Royal George.

PEARS.

Belmont.
Bergamot, autumn.
Gansels.
Beurre d'Aremberg.
brown.
Beurre Diel.
Easter.
Ranz.
Bon Chrétien, Williams.
Brougham.
Chaumontel.
Citron des carmes.
Crassane, Althorp.
Duchesse d'Angoulême.
Fondante Van Mons.
Glout Morceau.
Incomparable, Hacons.
Jargonelle.
Louise Bonne de Jersey.
Marie Louise.
Nelis, winter.
Passe Colmar.
St. Germains, Uvedale's.
Van Mons Leon le Clerc.

PINE APPLES.

Enville.
Black Jamaica.
Queen, Ripley's.
Trinder's seedling.
Welbeck seedling.

PLUMS.

Azure Hative.
Coe's golden drop.
Denyer's Victoria.
Diaprée Rouge.
Drap d'Or.
Greengage.
Impératrice, blue.
Ickworth.
Jefferson.
Orleans.
Perdrigon, blue.
Reine Claude Violet.

RASPBERRIES.

Antwerp, red.
yellow.
Cornish.
Cox's Honey.
Fastolf.
Monthly bearing.

STRAWBERRIES.

British Queen.
Elton.
Grove end scarlet.
Keen's seedling.
Myatt's Eleanor.
Roseberry.

C. AND J. ADLARD, PRINTERS, BARTHOLOMEW CLOSE.